F. K. Dzalaeva

POLYVAGAL THEORY IN PRACTICAL WORK. VERY SENSITIVE PATIENTS TREATMENT WITH FULL MOUTH REHABILITATION

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For dentists of all profiles, teachers of dental school and Universities, postgraduate students, practical dentists, practical dental technicians and doctors.

Dzalaeva Fatima Kazbekovna

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Acknowledgments

I gratefully dedicate this book to all my teachers who helped me grasp the fundamentals of gnathology and who inspired me along this challenging way by their support and personal examples. To Professor Rudolf Slavicek who had been helping and instructing me for 8 years. To Professor Sadao Sato who gave a new vision of the concept of treatment orthodontic patients. And also, to Mauro Fradiani and his annual Master program in Italy.

I would like to express my special gratitude to my assistants who made a monumental contribution to collecting information and documenting clinical cases.

To all my dear and grateful patients who trusted me and went along this way with me. Conscientious cooperation is what made it possible for us to apply all concepts and obtain results.

This book is based on my clinical cases 2024-2025 and application of literature analyses of books of Sadao Sato, Rudolf Slavicek, Porges and other famous scientists.

In 2005-2013 we were interested in treatment patients with TMJ disorders, bruxing habits, clenching and myofascial pain syndrome. In 2013-2014 I did a summary of this experience and I came to the conclusion that 90 precent of all my clinical cases where patients with disorders described in polyvagal theory.

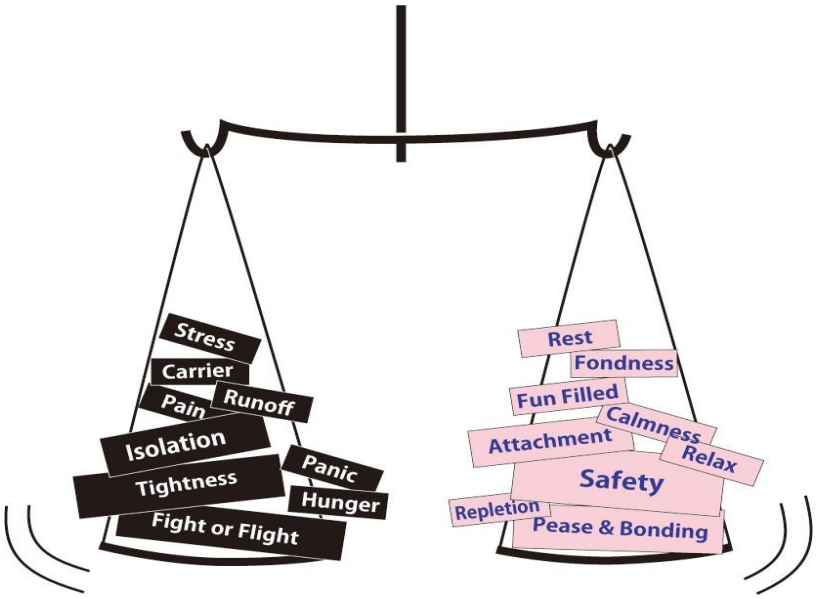
In 2018 in Vienna Summer School congress, I presented my clinical cases and at the same time prominent world scientists did their reports about polyvagal theory, bruxing habits and I summarized our experience.

I'm grateful to Professor Rudolf Slavicek, Professor Sadao Sato and Professor Porges for this concept. I fully support and agree with this way of thinking.

Part 1. The polyvagal theory. Principles and potential applications to dentistry.

Social Engagement System of newly developed ANS, Neurophysiological foundations of Emotions, Attachment, Communication, Self-regulation.

Social events in life are more and more influence to our health "Fight or Flight" vs "Attachment or Bonding". The nervous system is constantly assessing the environment as being safe, dangerous, or life-threatening. Through this process of neuroception, neural circuits are triggered that will either support health and healing or support defensive strategies of fight-or-flight or shutdown (**Stephen W. Porges)**



Open Questions

1.Tasks of the masticatory organ in social engagement
2.New definition of Stress
3.Sex difference in stress management

Cranio-mandibular Orthodontics

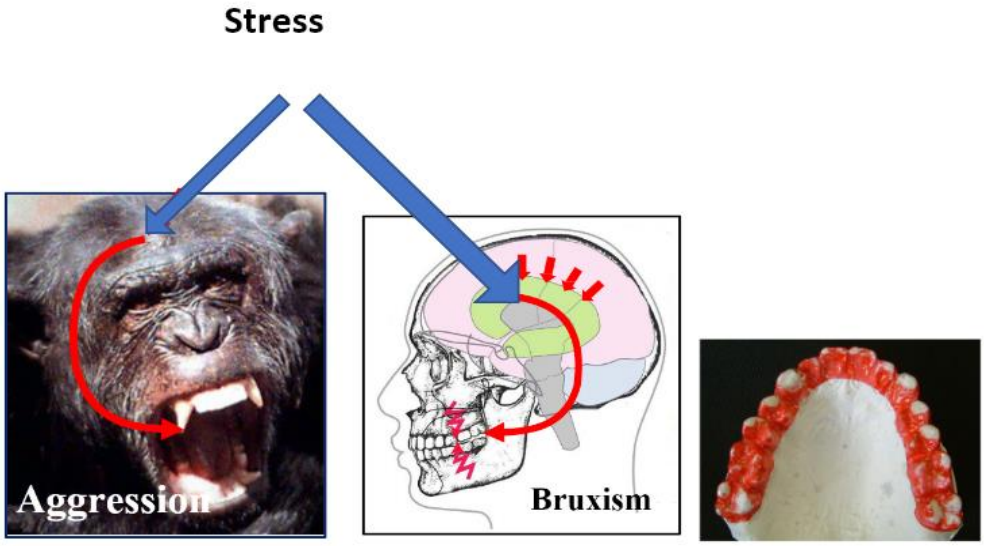
Most of malocclusions associate with mandibular displacement, not only dental problems, therefore it is very important to provide the functional occlusion with correct jaw relation in occlusion treatment.

Occlusion Medicine

Research results show the relationship between the masticatory organ, brain function, and the stress pathways. It has become important to progress toward this new area of medicine that lies at the interface between stress medicine and occlusion dentistry, occlusion medicine.

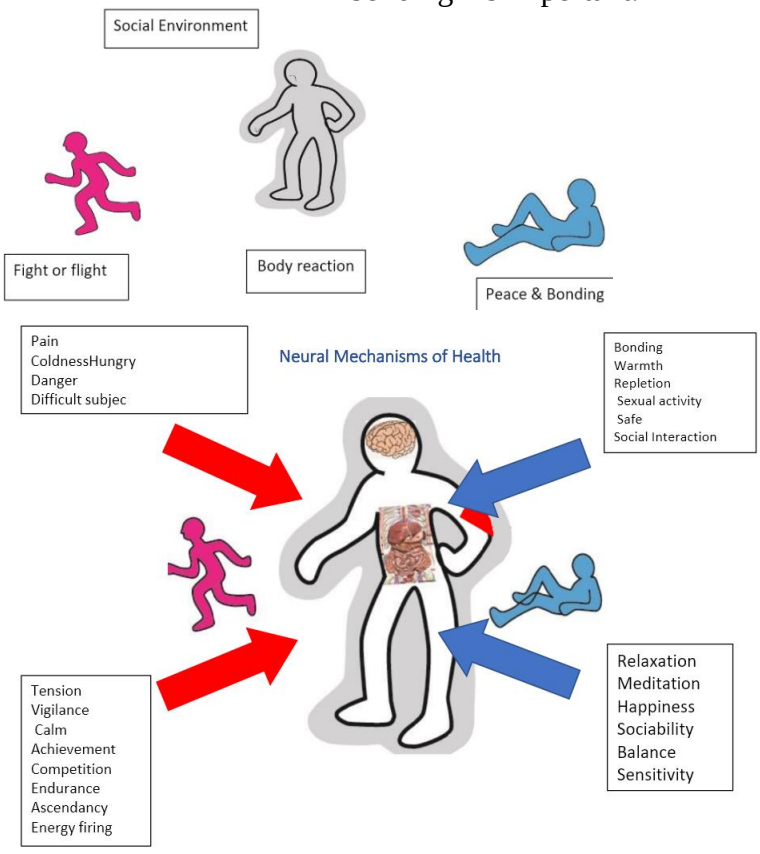
Stress Management of the Masticatory Organ

It has been described relationship between the masticatory organ and limbic system, especially Amygdala. It has been also suggested that the masticatory organ is closely related with Autonomic Nervous System.



Occlusion medicine connected to Polyvagal theory

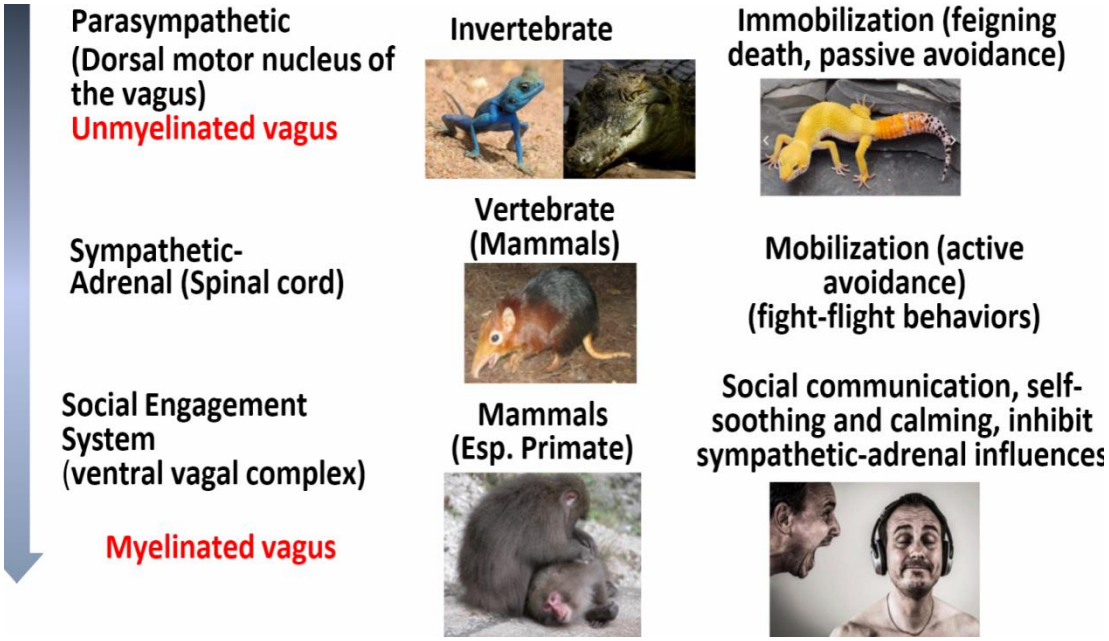
- What is the polyvagal?
- Interrelation between the Polyvagal and the Masticatory Organ.
  Roles of the masticatory organ in social engagement system. Health Care Medicine.
  It has long been studied body reactionmainly regard “Fight or flight”**.** But, for health care, research about “Peace and bonding» is important.



Three phylogenetic principles

1.There is a phylogenetic shift in the regulation of the heart from endocrine communication to unmyelinated nerves, and finally to myelinated nerves.
2.There is a development of opposing neural mechanisms of excitation and inhibition to provide rapid regulation of graded metabolic output.
3.With increased cortical development, the cortex exhibits greater control over the brainstem via direct (corticobulbar) and indirect (corticoreticular) neural pathways, originating in motor cortex and terminating in the source nuclei of the myelinated motor nerves emerging from the brainstem, specific visceral neural pathways embedded within cranial nerves V, VII, IX, X and XI.The three phylogenetic stages of the neural control of the heart proposed by the polyvagal theory.

Evolution of ANS against Threatening



Stephen W. Porges, International Journal of Psychophysiology 42 (2001) 123-146

Brain Stem. Myelinated Nerves.

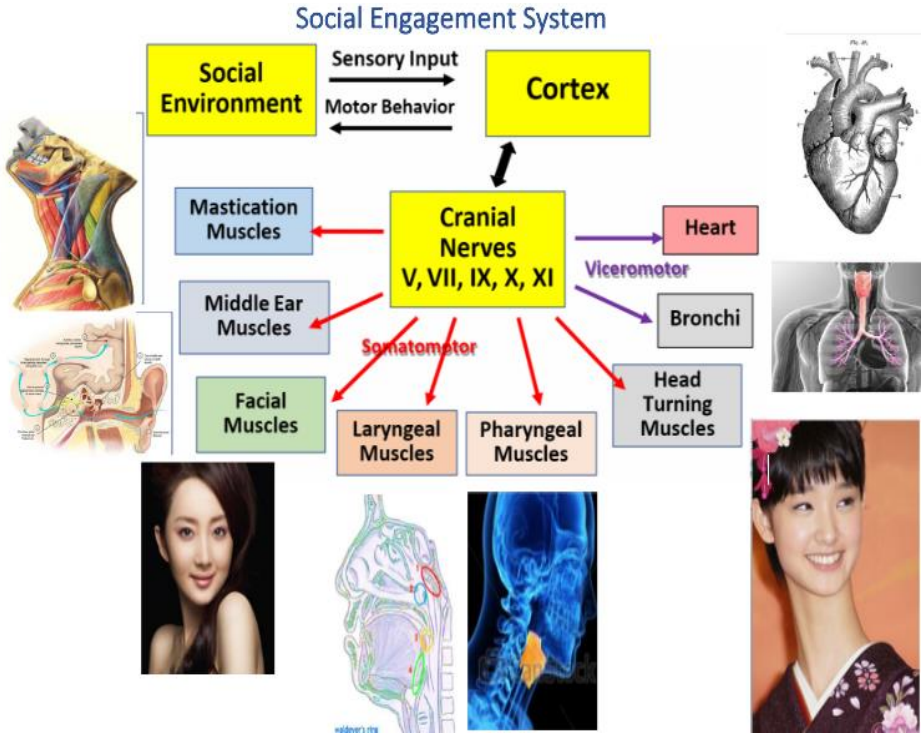
V. Trigeminus N.
VII. Facialis N.
IX. Glossopharyngeus N.
XI. Accessorius N.

Ventral Vagal Complex (VVC):

Phylogenetically, VVC is the most recent developed system. The VVC is composed of a somatomotor component, and a visceromotor component (the myelinated vagal pathways from the nucleus ambiguous to the sinoatrial node of the heart and the bronchi).

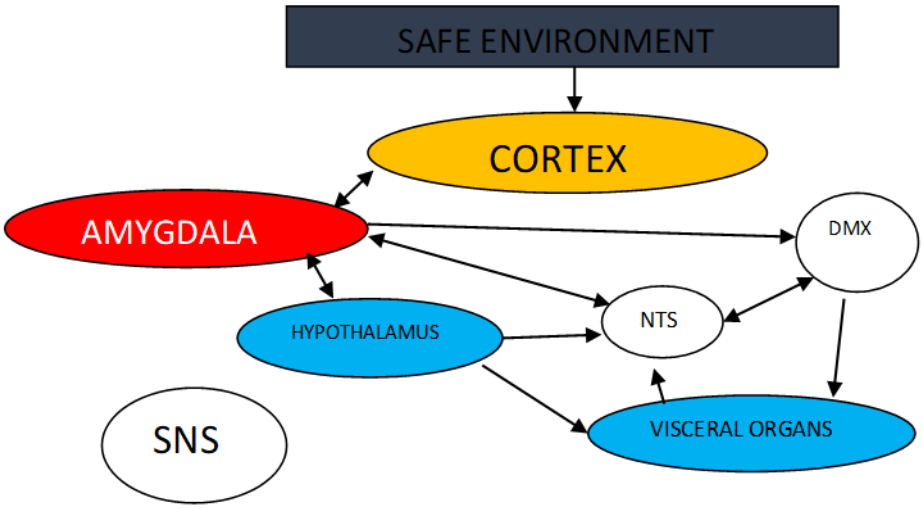
Dorsal Vagal Complex (DVC):

The DVC is parasympathetic unmyelinated nervous system. When the individual perceives the safe environment, oxytocin (OXT) is released centrally to the sensory and motor portions of the DVC.

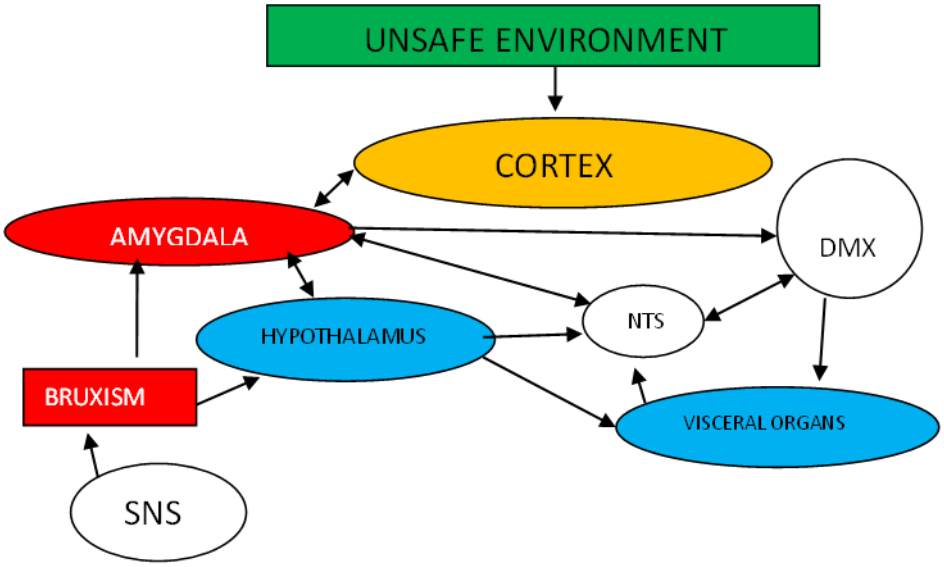


The social engagement system: social communication is determined by the cortical regulation of medullary nuclei via corticobulbar pathways and consists of a somatomotor component (i.e., special visceral efferent pathways that regulate the muscles of the head and face) and a visceromotor component (i.e., the myelinated vagus that regulates the heart and bronchi).

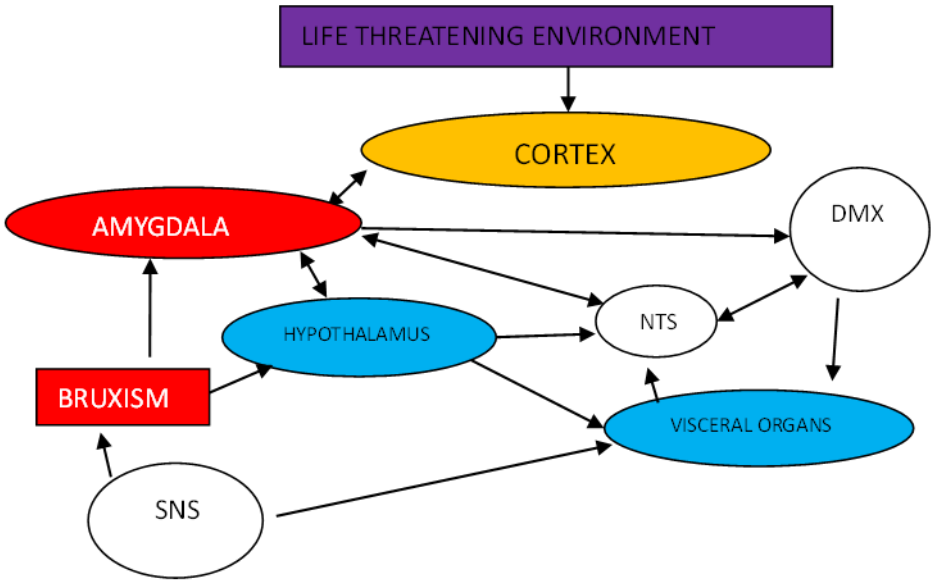
Solid arrows indicate the somatomotor component. Dashed arrows indicate the visceromotor component.



DVC: dorsal vagal complex
NTS: nucleus of the solitary tract
DMX: dorsal motor nucleus of the vagus
OXT: oxytocin**.** Neural and neuropeptide regulation of the dorsal vagal complex (DVC) in a safe environment.
The DVC includes sensory nuclei in the nucleus of the solitary tract (NTS) and area postrema, and motor nuclei in the dorsal motor nucleus of the vagus (DMX).
When the individual perceives the environment as safe, oxytocin (OXT) is released centrally to the sensory and motor portions of the DVC and systemically to the visceral organs.
Functionally, OXT fosters a calm immobilization or ‘anti-stress’ state.



DVC: dorsal vagal complex
NTS: nucleus of the solitary tract
DMX: dorsal motor nucleus of the vagus
AVP: central vasopressinergic pathways
Neural and neuropeptide regulation of the dorsal vagal complex (DVC) in an unsafe environment. During perceived danger, when mobilization is adaptive, central Vasopressinergic pathways (AVP) communicate between the hypothalamus and both NTS and area postrema
to change the set- point of vagal reflexes (e.g. baroreceptor reflex) to facilitate sympathetic excitation.



DVC: dorsal vagal complex
NTS: nucleus of the solitary tract
DMX: dorsal motor nucleus of the vagus
AVP: central vasopressinergic pathways
Neural and neuropeptide regulation of the dorsal vagal complex (DVC) in a life-threatening environment.
During life-threatening events when fight-flight behaviors are not an option, immobilized fear responses are elicited.

Immobilized fear is fostered by vagal surges from the DMX to visceral organs, which are potentiated by systemic AVP. Systemic AVP triggers increased DMX output by stimulating visceral afferents via NTS and area postrema

Part 2. Neuroception.

The Vagal Paradox: Discovering a Lost Defense System

- Bradycardia are mediated by the vagus and a risk index (potentially lethal);
- Heart rate variability is primarily mediated by the vagus and a protective factor;
- Not all vagal pathways support social communication, down regulate stress, and enhance resilience;
- There are vagal pathways that can be recruited for defense and are potentially lethal.

Is there a neurophysiological explanation?

Are “stress” models useful in explaining responses to abuse and trauma? Is there a defense system that is not part of fight-flight mechanisms? (Curt P. Richer, 1957 on the Phenomenon of Sudden Death in Animals and Man. (1)

Voodoo Death. Insights into PTSD

His cheeks blanch, and his eyes become glassy, and the expression of his face becomes horribly distorted. He attempts to shriek but usually the sound chokes in his throat, and all that one might see is froth at his mouth. His body begins to tremble and his muscles twitch involuntarily. He sways backward and falls to the ground, and after a short time he appears to be in a swoon. He finally composes himself, goes to his hut and their frets to death (2).

- Voodoo Death was defined as death due not disease or injury, but do to emotional stress.
- Cannon assumed that even this "immobilized" response would be associated with increased sympathetic nervous system excitation.
- "If in the future, however, any observer has opportunity to see an instance of voodoo death, it is to be hoped that he will conduct the simpler tests before the victim's last gasp." (3).

Immobilization with fear

How does theirs defensive system differ from fight-flight? What triggers this defense system? What are the dangers? How is it possible to recover?

Hopelessness. Vagal or Sympathetic Mechanisms?

“...we believe that human victims, like our rats, may well die a parasympathetic rather than a sympatico-adrenal death, as Cannon postulated" (C.P. Richter,1957).
Immobilization with fear:

- A missing concept in psychology and psychiatry;
- Not all stressors result in “fight/ flight”;
- Not all vagal (parasympathetic) influences are restorative.

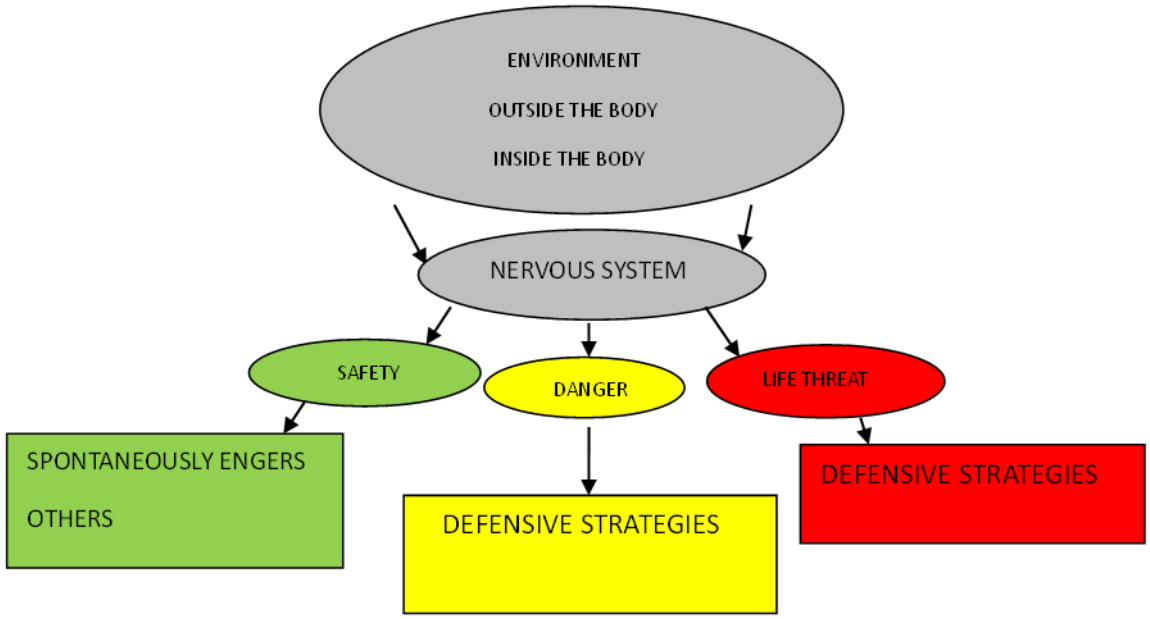
The autonomic Nervous System. A paired antagonism perspective trigeminocardic Reflex.

The TCR is described as the sudden development of cardiac arrhythmia, including cardiac arrest, arterial hypotension, apnea, and gastric hypermobility. Ewald Hering's laboratory in Vienna in 1869 is the birthplace of the TCR, even though the term was not use to refer to this phenomenon until a century later. (Gaskell, 1916).

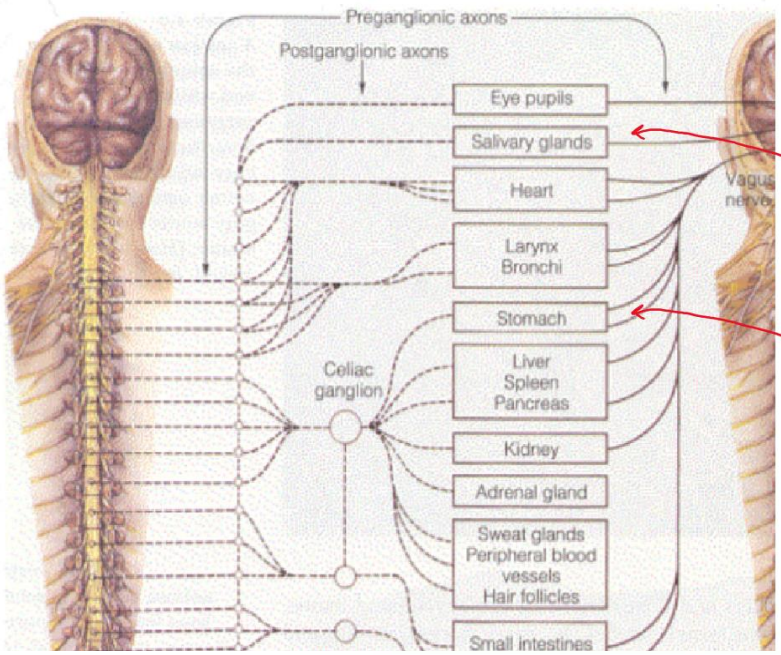
Polyvagal Theory

- Provides a theoretical basis for a neuroscience of safety.
- Explains how autonomic state is optimized during safe social interactions and disrupted during states of defense.
- Explains how social interactions recruit neural circuits that support health, growth and restoration, while cues of danger and life threat recruit neural circuits that disrupt bodily processes.
- Evolution provides an organizing principle to understand neural regulation of the human autonomic nervous system as an enabler of social behavior.
- Three neural circuits form a phylogenetically= ordered response hierarchy (dissolution) that regulate behavioral and physiological adaptation to safe, dangerous, and life-threatening environments.
- "Neuroception" of danger or safety or life threat trigger these adaptive neural circuits.

The quest for safety. Emergent Properties of Physiological State

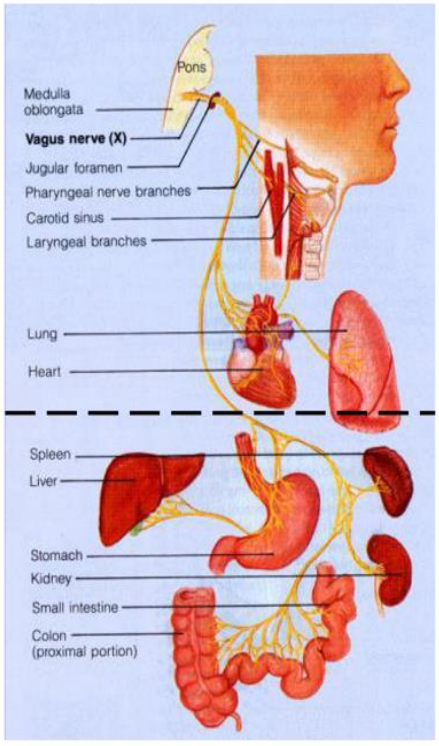


The autonomic Nervous System. A paired antagonism perspective



Supra- diaphragmatic (myelinated) vagus

Sub- diaphragmatic (unmyelinated) vagus



Supra- diaphragmatic (myelinated) vagus

Sub- diaphragmatic (unmyelinated) vagus

Evolution as an organizing principle. Three phylogenetic stages of Neural Development of ANS.

Stage 1: Primitive unmyelinated vagus (DVC)

- Immobilization behaviors (i.e., fainting, shutdown, dissociation).

Stage 2: Sympathetic Nervous System (SNS)

- "Fight- flight" behaviours .

Stage 3: Myelinated mammalian vagus (VVC)

- Social communication ↔ homeostasis;
- Enables social interactions to regulate physiology and promote health growth and restoration (balance between unmyelinated vagus and SNS).

Phylogenetic organization of the ANS: The Polyvagal Theory.

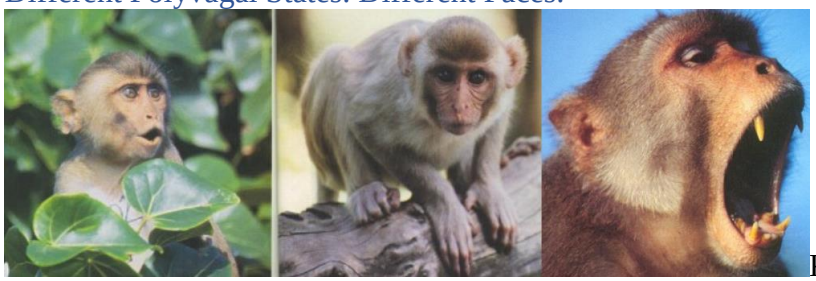
- Immobilization as a defense strategy is a missing concept in psychology and psychiatry, although forced immobilization (restraint) is a frequent feature of trauma and chronic abuse;
- Not all stressors result in "fight/flight";
- Not all vagal (parasympathetic) influences are restorative.

Social Engagement

The face-heartconnection. A criticalcomponentof a social engagementsystem.

- At birth mammals have bidirectional neural communication between the face and the heart (suck-swallow-breathe-vocalize), which forms the core of a Social Engagement System;
- Metabolic demands, perceived danger, life threat, and illness retract the Social Engagement System resulting in a face that is not "social" and a physiological state (removal of the vagal brake on the heart) that promotes defensive behaviors;
- The face reflects Polyvagal state.

Different Polyvagal States. Different Faces.


Kalin et al., Scientific American

Dissolution: Definition

The higher nervous arrangements inhibit (or control) the lower, and thus, when the higher are suddenly rendered functionless, the lower rise in activity (John Hughlings Jackson).

Dissolution: Polyvagal Theory

The ANS reacts to challenges in a phylogenetically ordered response hierarchy with newest components of the ANS responding first.

A Phylogenetic Hierarchy of Response Strategies:

Structure	Function	VVC	SNS	DVC
Head	Communication	+		
Limbs	Mobilization		+	
Viscera	Immobilization			+

Dissolution: Polyvagal Response Strategies

- Removal of VVC Tone
- Increase Sympathetic Tone
- Surgein DVC Tone

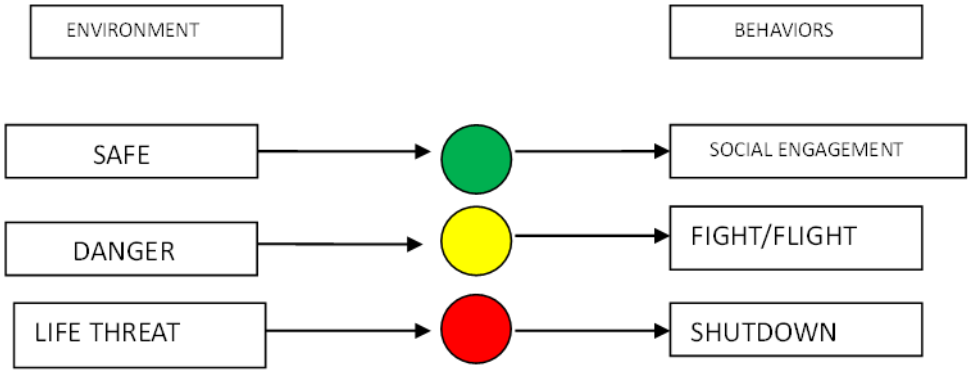
Detecting Safety: Neuroception - the nervous system's detection of risk in other – *without awareness.*

- Can dampen defensive systems and facilitate social behavior (safety).
- Can promote defensive strategies of mobilization (fight/flight) or immobilization (shutdown, dissociation).
- Triggers of "defense" are often related to a history of physical restraint or social isolation.

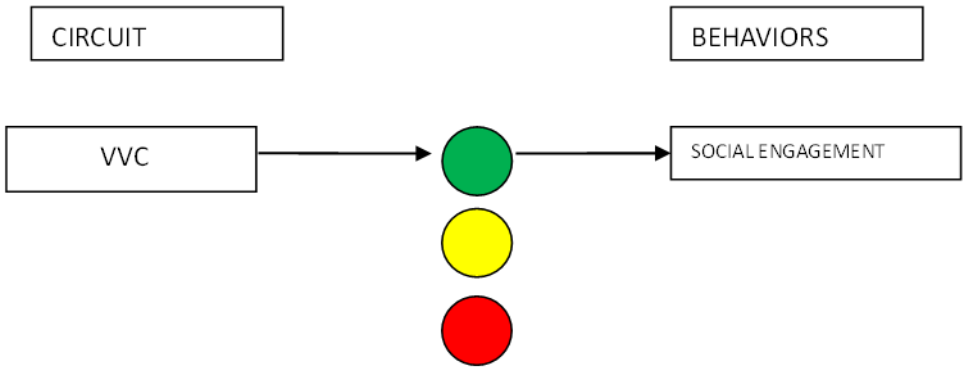
Neuroception. Three Circuits, Five States of Social Communication.

Physiological State: Rules to treat our body.

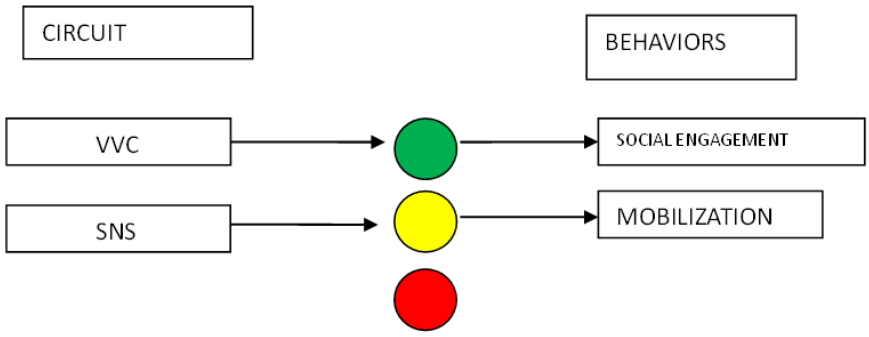
- Health requires the turning off of ANS defenses.
- Health is about understanding the cues that our nervous system requiresto feel safe.
- Feeling safe provides the setting conditions for optimizing physical and mental health, healing, and promoting social behavior.



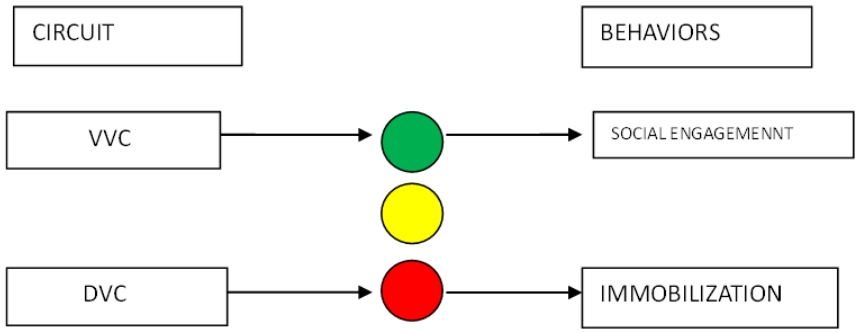
Physiological State: Feel safe



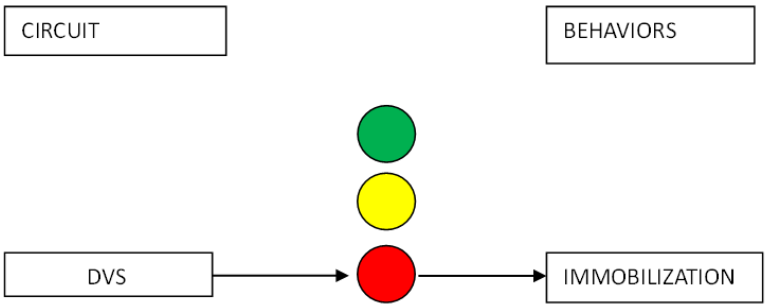
Physiological State: Play/Dance



Physiological State: Fight/Flight

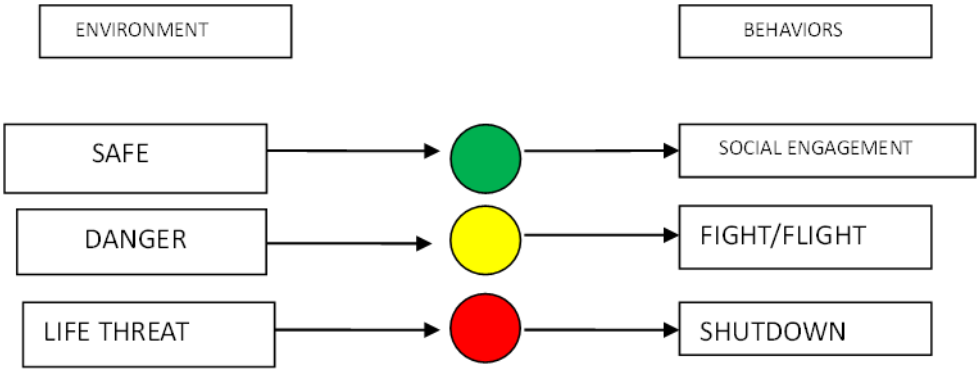


Physiological State: Intimacy: Immobilization without fear

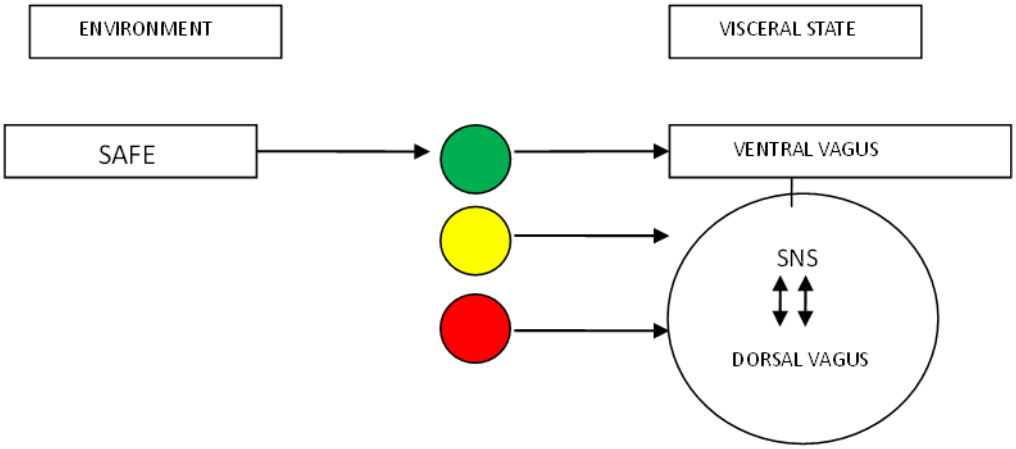


Physiological State: Shutdown: Immobilization with fear

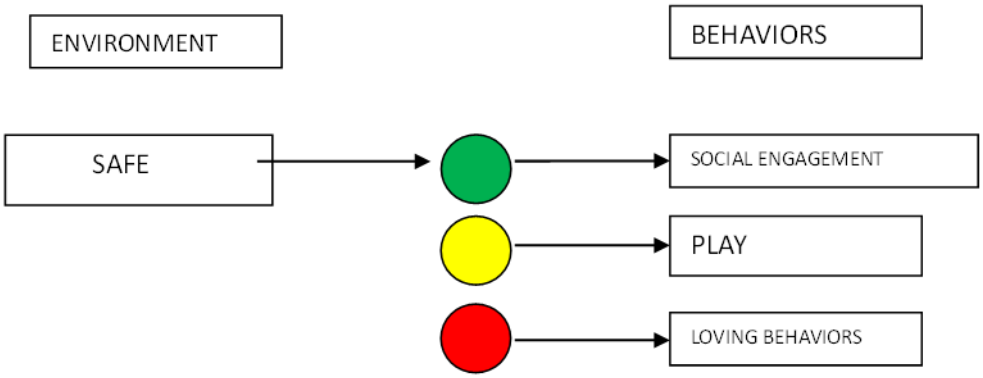
Physiological State



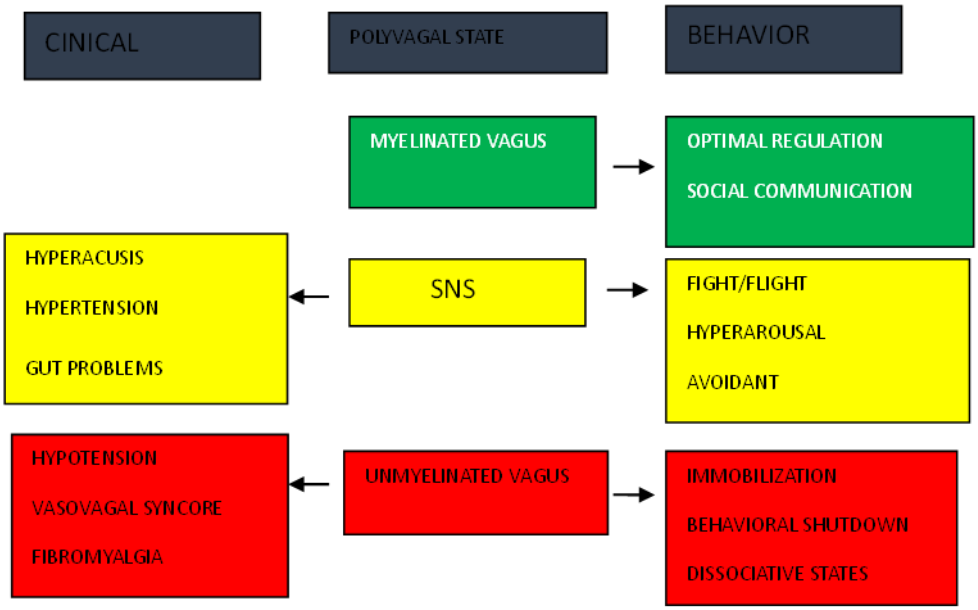
Physiological State: Promotes mental and physical health



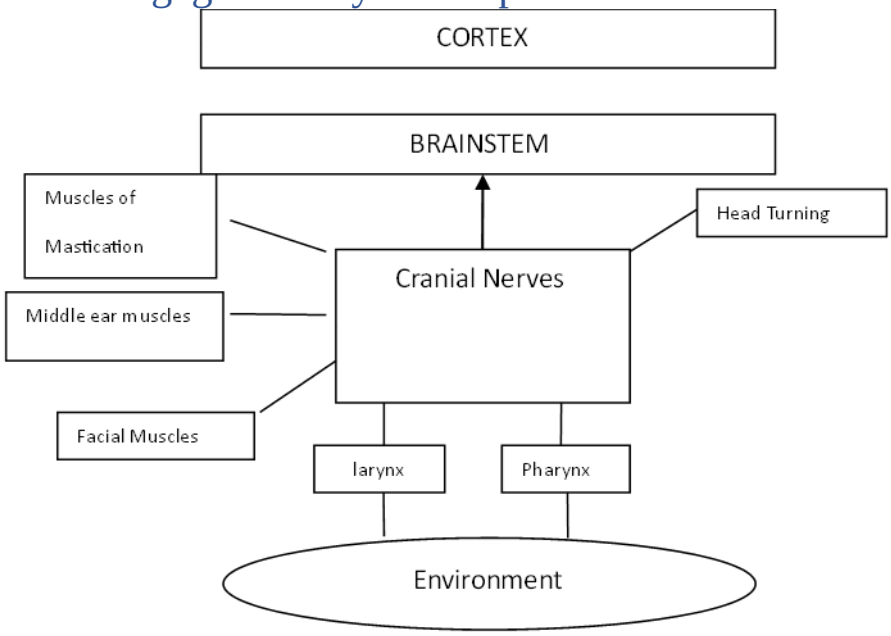
Physiological State:



New Model



Social Engagement System. Special Visceral Efferent Pathways



Deconstructing the "Mammalian" Social Engagement System

A Focus on Efferent Pathways

- Somatomotor component.

Special visceral efferent pathways originating in source nuclei of cranial nerves V, VII, IX, X, & XI (branchiomotor, evolving from the ancient gill arches).

- Visceromotor component.

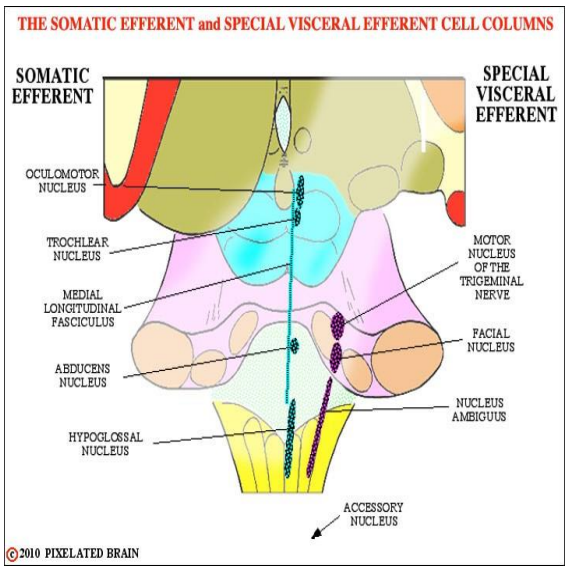
Supradiaphragmatic (myelinated) vagus originating in the nucleus ambiguous.

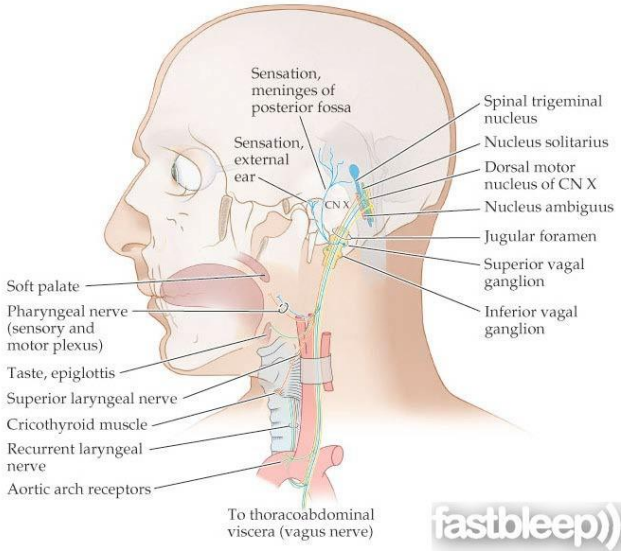
Special Visceral Efferent (SVE) Column

Motor nuclei regulating muscles developed from the pharyngeal arches (branchiomotor cell column).

Origin in the brainstem:

- Nucleus ambiguus (IX, X, & cranial part of XI) in medulla.
- Motor nucleus of the trigeminal nerve (cn V) in mid pons.
- Motor nucleus of the facial nerve (cn VII) in the caudal pons.





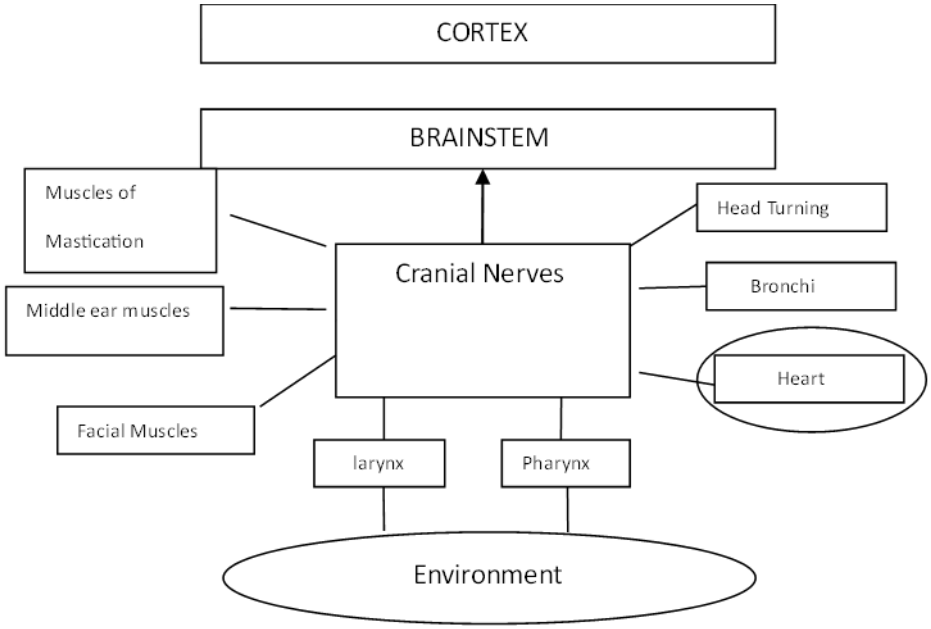
Social Engagement System. Observable Deficits in Autism (and other psychopathologies):

- Lack of prosody
- Poor eye contact and difficulties in social communication
- Blunted facial expressivity
- Difficulties in behavioral state regulation (hypervigilant, anxious, distractible, impulsive, tantrums, hypoarousal)
- Compromised vagal regulation (e.g., state regulation, digestion)
- Difficulties in listening, following verbal commands, speech-language delays
- Sound sensitivities
- Oral motor defensiveness (e.g.,injective behaviours)

Deconstructing the "Mammalian" Social Engagement System.

Visceromotor component Supradiaphragmatic (myelinated) vagus originating in the nucleus ambiguous.

The Role of Breath



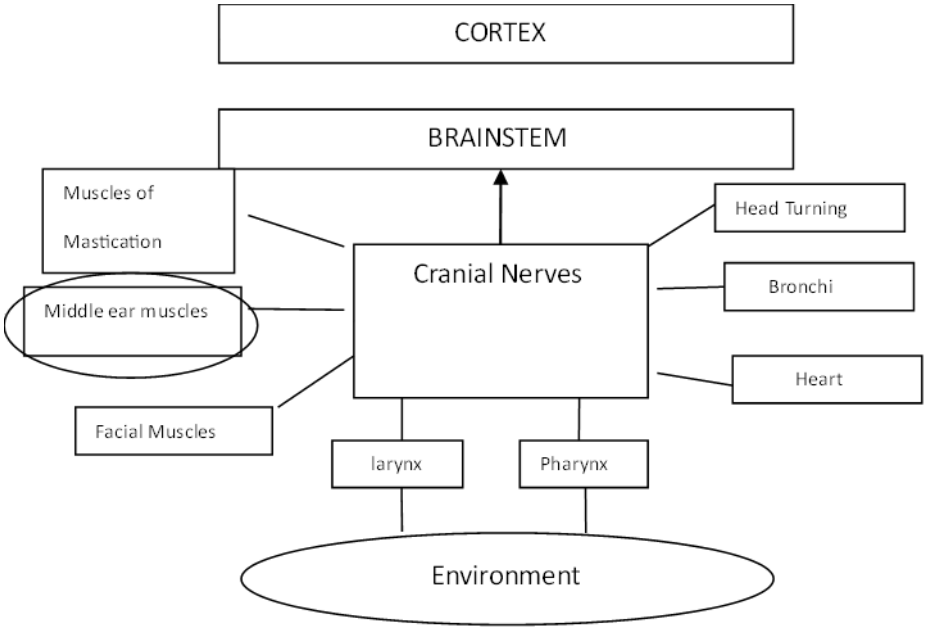
- Breathing modulates the "ventral" vagus
- Inhalation turns off the vagal brake (i.e., heart rate increases)
- Exhalation turns on the vagal brake (i.e., heart rate decreases)
- Breathing therapies exercise the vagal brake

Deconstructing the "Mammalian" Social Engagement System

- Somatomotor component

Special visceral efferent pathways originating in source nuclei of cranial nerves V, VII, IX, X, & XI (branchiomotor, evolving from the ancient gill arches).

Deconstructing the Social Engagement System: Listening and the middle ear muscles.

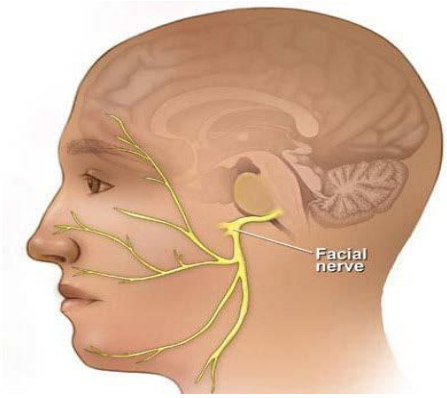


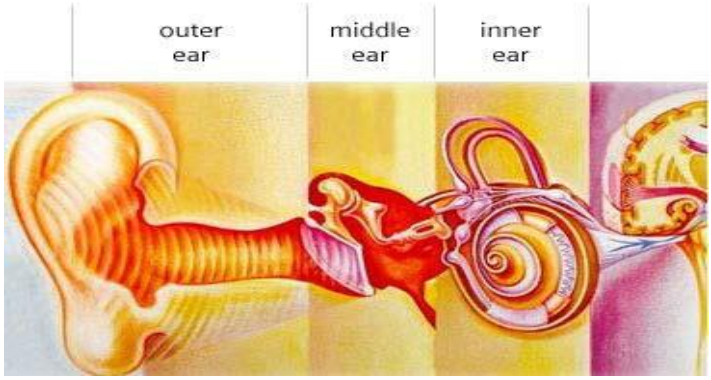
Detached Middle Ear Bone: A mammalian features

- Detached middle ear bones are a defining feature of mammals.
- Living mammal species can be identified by the presence in females of mammary glands. Since mammary glands and other soft-tissue features are not visible in fossils, detached middle ear bones are used.
- Without "detached" middle ear bones, low amplitude sounds in higher frequencies would not be heard. Thus, enabling mammals to communicate in a frequency band that is difficult to hear for reptiles.
- Without functioning middle ear muscles, we are hypersensitive to the low frequencies trigger predator!

The Role of the Middle Ear: Extraction of Human Voice

- Evolution and middle ear bones
- Transfer function of the middle ear
- Frequency bandof perceptual advantage

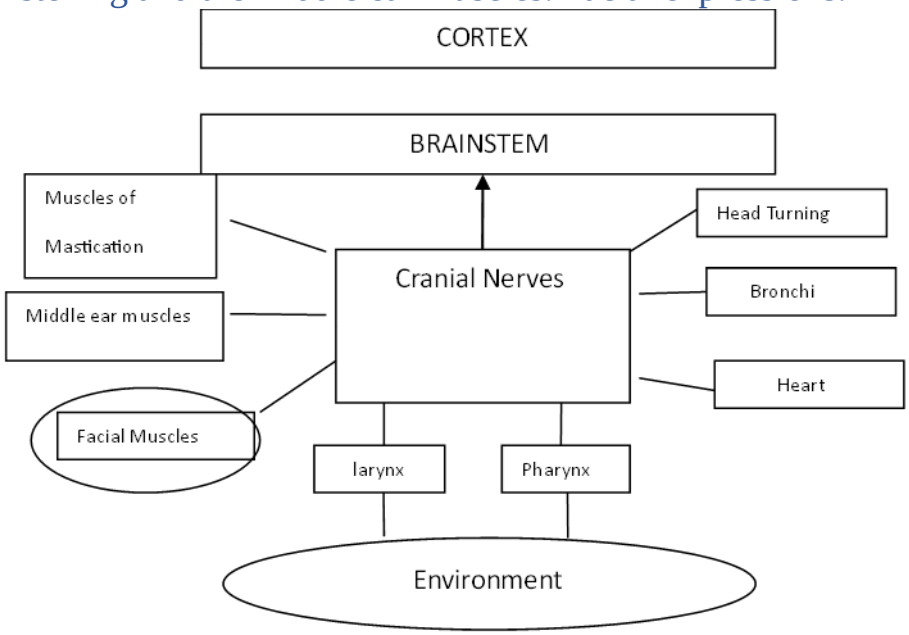




Looking and Listening: common neurophysiological mechanisms.
Structures of the Middle Ear underlying mechanisms of Auditory Hypersensitivities.
Equal loudness contours:Auditory anti-masking mechanisms: extracting speech (music) from background sounds.

- Function of the middle ear muscles (MEM)
    - Attenuates lowf requency sounds
- Function of the medial olivary-cochlear systems (MOC)
    - Dampens high frequency sounds
- Consequences of MEM and/or MOC not functioning
- Relation of MEM to other physiological, neurological, psychological features
- Therapeutic "exercise" of MEM

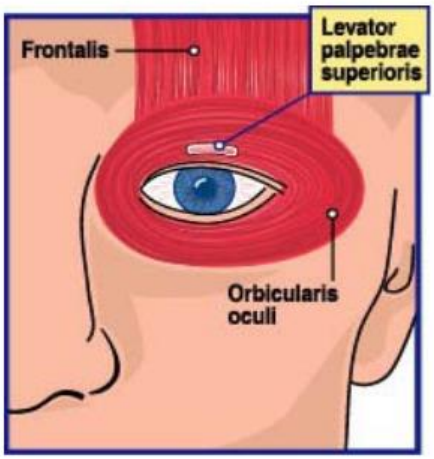
Deconstructing the "Mammalian" Social Engagement System. Listening and the middle ear muscles. Facial expressions.

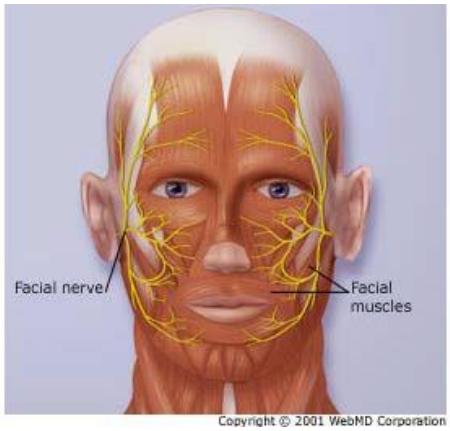


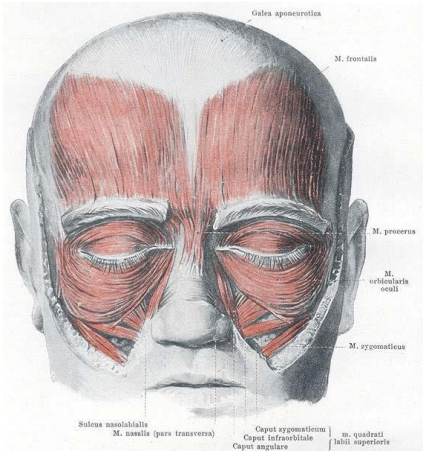
Facial Nerve (cn VII). Bell's Palsy: Lateralized paralysis of the facial nerve. Impact on the social engagement system.

- Drooping of the muscles of the face
- Inability to close the eyelid and to blink
- Difficulty chewing
- Hyperacusis

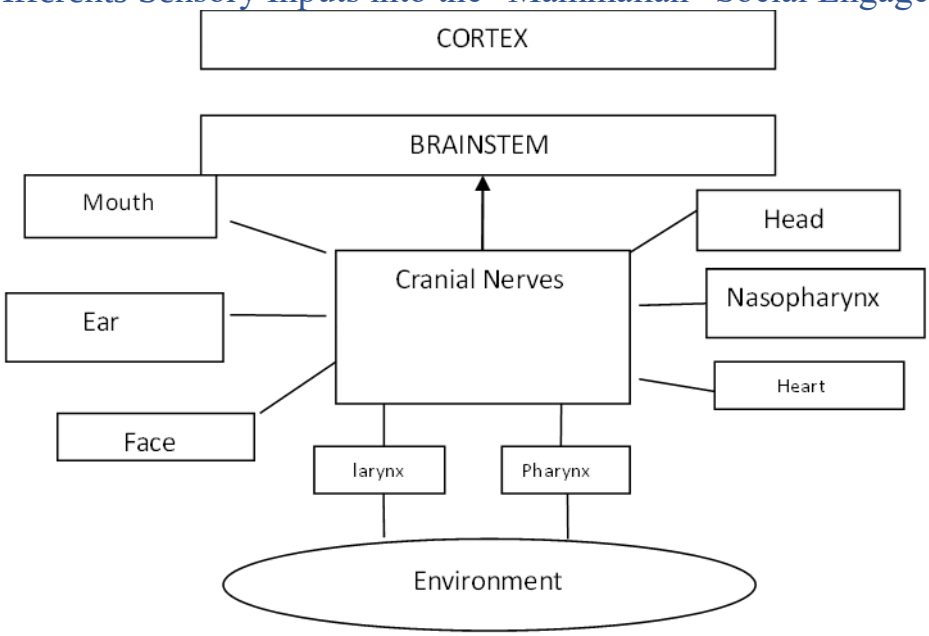
Orbicularis Oculi and Gaze. Muscles of the Upper Face.







Afferents Sensory Inputs into the "Mammalian" Social Engagement System.

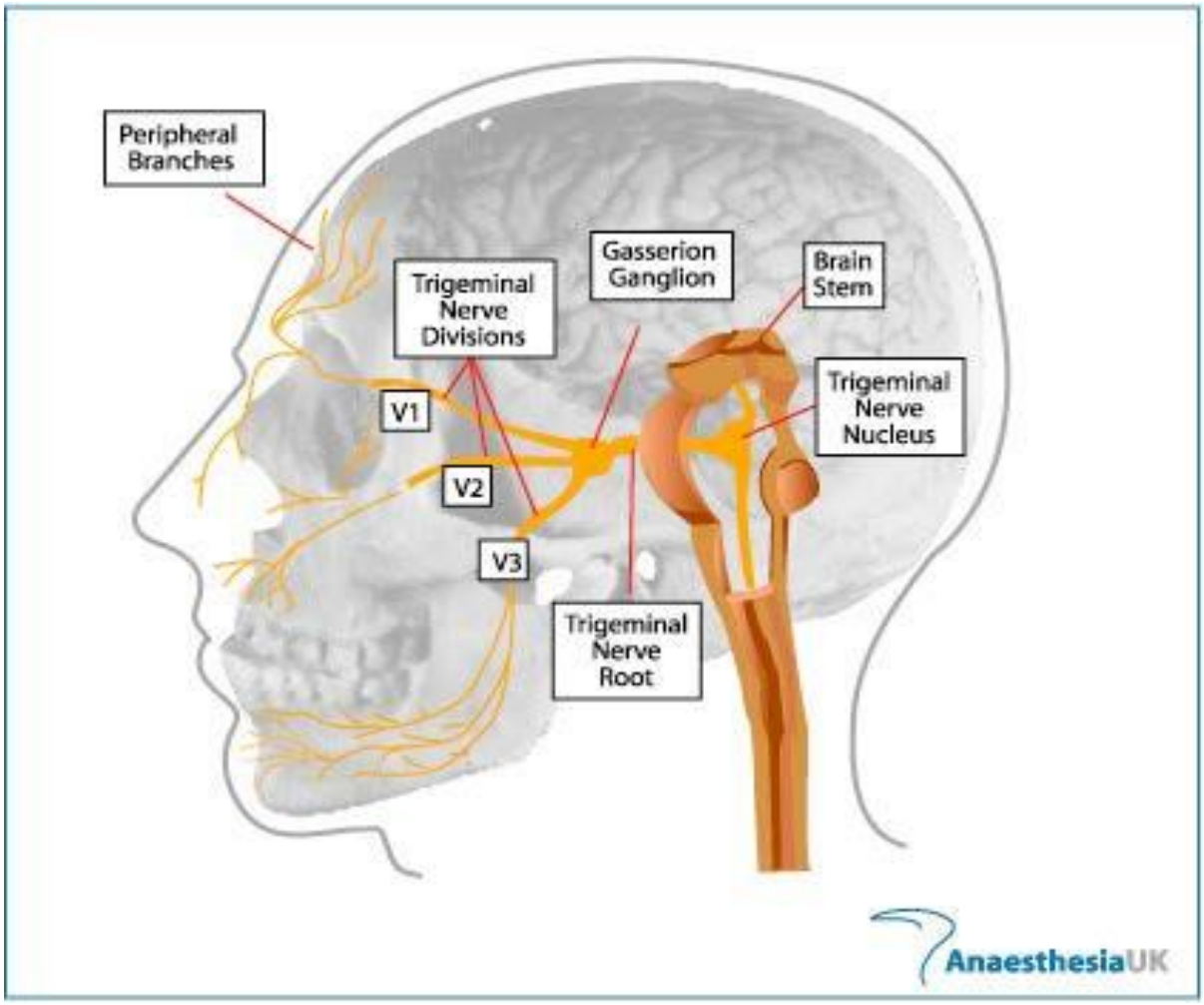


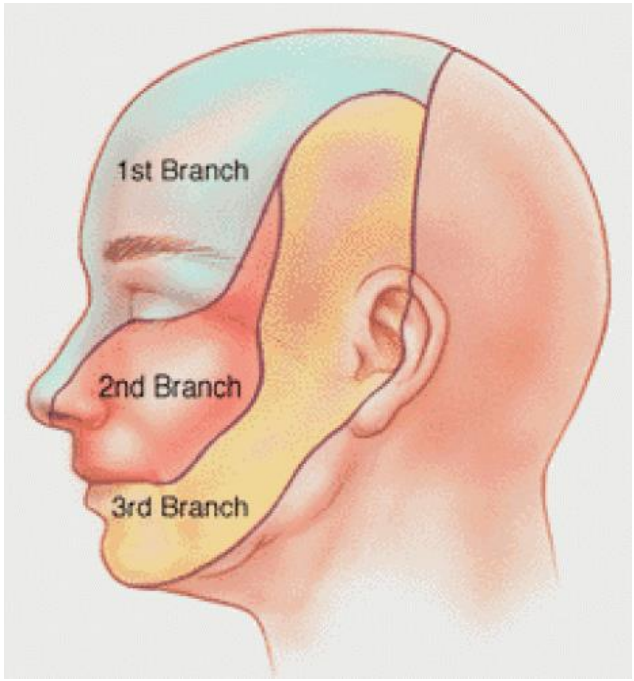
TrigeminalSensoryPathways:

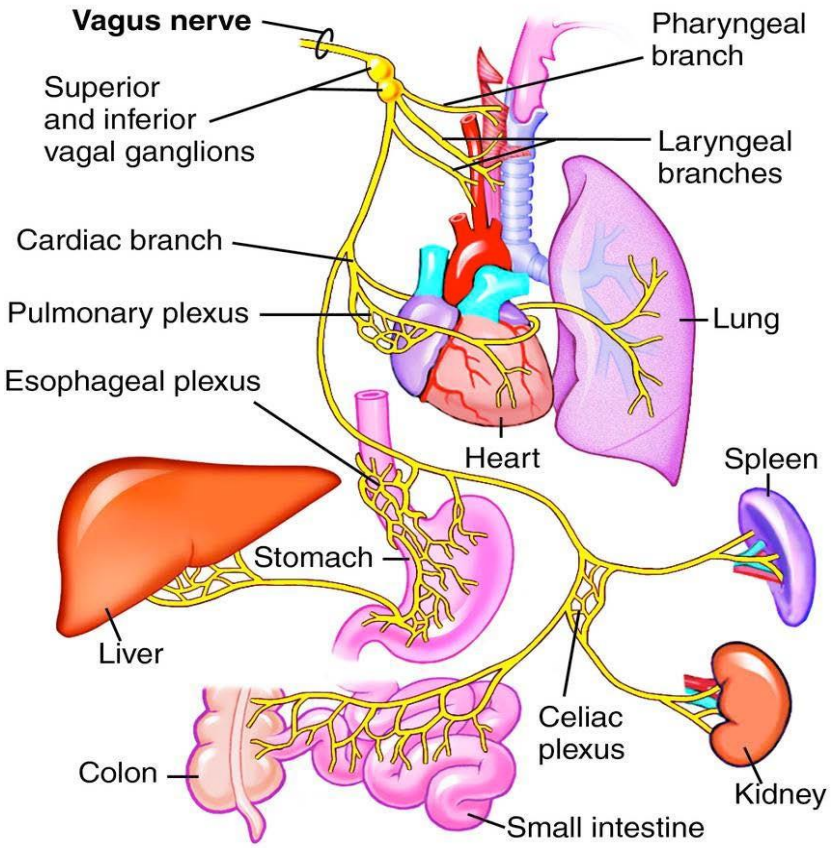
- Cornea
- Mucocutaneous tissues around mouth and nostrils.
- Oral and nasal mucosae
- Paranasal sinuses
- Tongue (anteriortwothirds)
- Teeth and gums
- Dura of anterior and middle cranial fossae
- Skin of face to the vertex except angle of jaw
- Parts of externalear

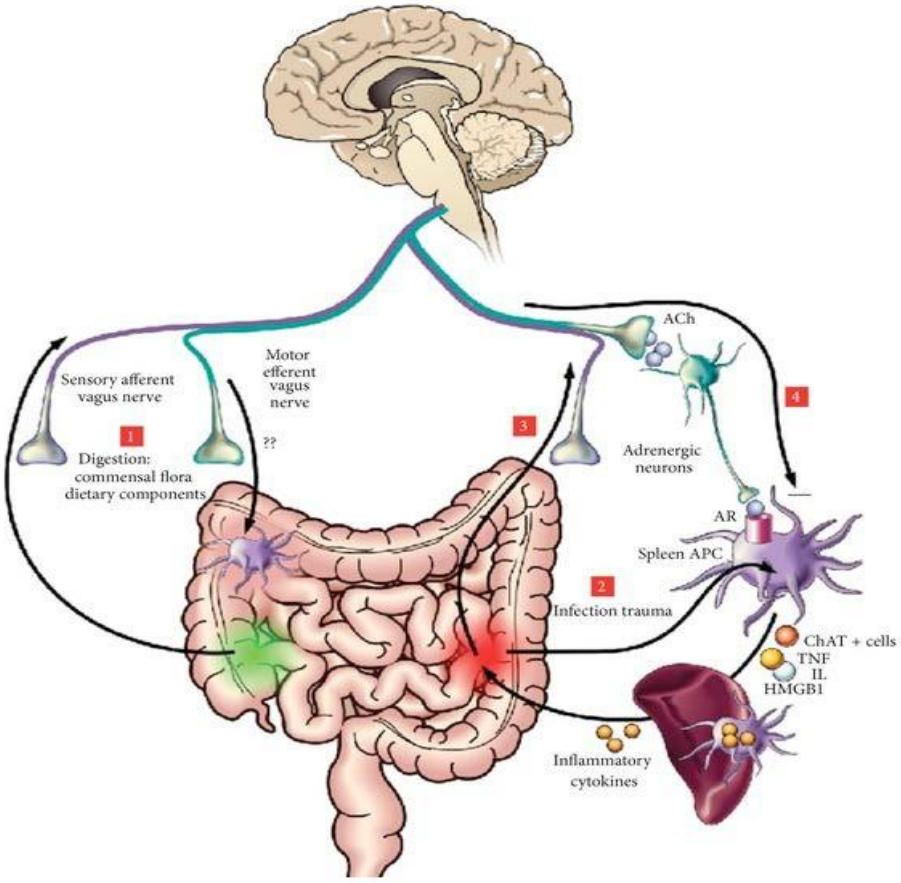
Trigeminal afferents are involved in several complex autonomic reflexes. Characteristic changes in cardiovascular and respiratory function are elicited by various patterns of trigeminal sensory stimulation. These reflexes include the diving reflex, the oculo- cardiac reflex, naso-cardiorespiratory reflexes, and the trigeminal depressor response.

Trigeminal Afferents






Vagus nerve
Superior and inferior vagal ganglions
Pharyngeal branch
Laryngeal branches
Cardiac branch
Pulmonary plexus
Lung
Esophageal plexus
Heart
Spleen
Stomach
Liver
Celiac plexus
Colon
Kidney
Small intestine


ACh
Motor efferent vagus nerve
Sensory afferent vagus nerve
1
Digestion: commensal flora dietary components
??
3
4
Adrenergic neurons
AR
Spleen APC
2
Infection trauma
ChAT + cells
TNF
IL
HMGB1
Inflammatory cytokines

Noncontact Vagal Nerve Stimulation: eTNS?

External Trigeminal Nerve Stimulation (eTNS) system is an innovative medical device that offers non-invasive cranial nerve stimulation for treating epilepsy. Until recently, vagus nerve stimulation (VNS), which requires a surgically-implanted device, was the only cranial nerve stimulation available to epilepsy patients.

eTNS is easy and convenient. Patients use the system in the comfort of their own home. The device is about the size of a cell phone. A wire is attached to a small patch that adheres to a patient's forehead, just above the eyebrows. Patients typically describe stimulation as a tingling sensation and most choose to deliver the therapy at night while they are asleep.

Monarch eTNS System, a non-invasive medical treatment that uses mild electrical signals to stimulate branches of the trigeminal nerve. Stimulating the trigeminal nerve offers a non-surgical alternative to vagus nerve stimulation (VNS) and deep brain stimulation (DBS), which requires surgical implantation of a device in the patient's chest, neck, and brain.

The system takes advantage of the physiology of the trigeminal nerve. Not only is it a high-bandwidth pathway whose branches extend deep into the brain – a virtual "USB port to the brain" – its branches are located close to the skin's surface just above the eyebrows. This allows the nerve to receive electrical pulses through the skin.

Toothache of Cardiac Origin

Pain referred to the orofacial structures can sometimes be a diagnostic challenge for the clinician. In some instances, a patient may complain of tooth pain that is completely unrelated to any dental source…. Cardiac pain most commonly radiates to the left arm, shoulder, neck, and face… In rare instances, angina pectoris may present as dental pain. When this occurs, an improper diagnosis frequently leads to unnecessary dental treatment or, more significantly, a delay of proper treatment…. This article reviews the literature concerning referred pain of cardiac origin and presents a case report of toothache of cardiac origin. Journal of Orofacial Pain (Kreiner& Okeson,1999).

Polyvagal Syndrome?

- Special visceral efferents
  - Lack of prosody (IX, X)
  - Poor face - face gaze (VII)
  - Flat facial expressivity (VII)
  - Sound hypersensitivities (V, VII)
  - Inappropriate posture during social engagement (XI)
- Vagal regulation
  - Poor moodand affect
  - Atypical state regulation
  - Low threshold to become fight/flight
  - Low thresholdt to be dissociative
  - Low ergut problems
  - Fibromyalgia

PolyvagalSyndrome?

Stage I (dampened Social Engagement System)

- Blunted affect
- Lack of prosody
- Poor face-facegaze
- Flat facial expressivity – especially upper face
- Sound hypersensitivities
- Inappropriate posture during sociale engagement
- Poor moodand affect

- Atypical state regulation (difficulties self-regulating and co- regulating)

Stage II (highly mobilized and reactive)

- Low threshold to fight/flight
- Atypical state regulation (varies between apparently calm and reactive)

Stage III (vulnerable to shut down and dissociation)

- Atypical state regulation (varies between highly mobilized and shutdown)
- Low threshold to immobilize and become dissociative
- Low ergut problems
- Fibromyalgia

Stage IV (chronic shutdown and dissociative)

Trauma and Abuse Disrupt. Co-regulation and Connectedness

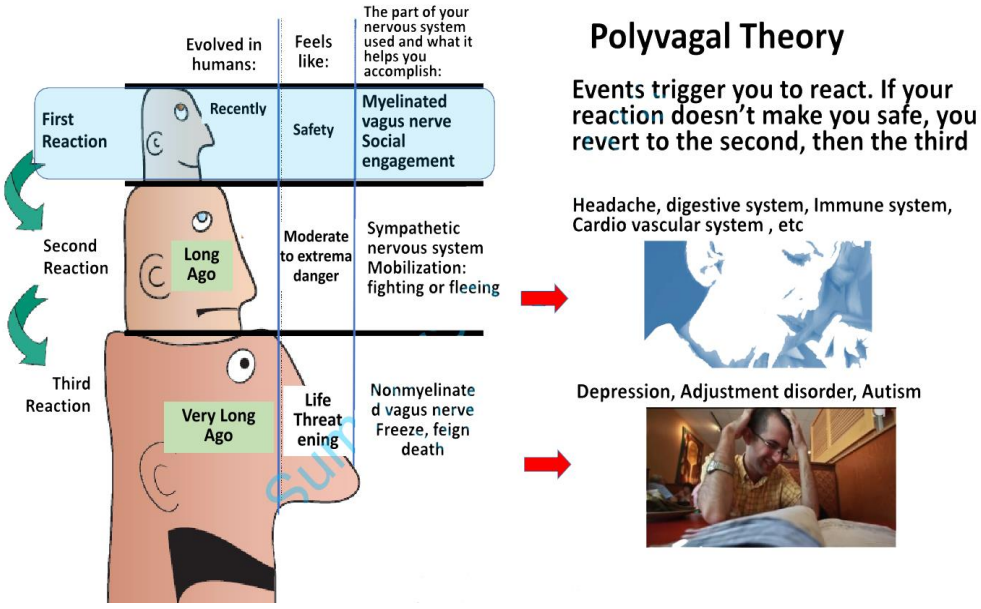
- Life threat triggers a very ancient neural circuit that severely limits social engagement behaviors and may distort *neuroception resulting* in a detection of risk when there is no apparent risk.
- Attempts to socially engage a traumatized individual, rather than calming, may result in defensive strategies of rage and anger.
- Treatment of trauma may require a new model distinct from the traditional strategies of face-to- face dialog*

The Look of Love: A Polyvagal Perspective by Burt Bacharach & Hal David

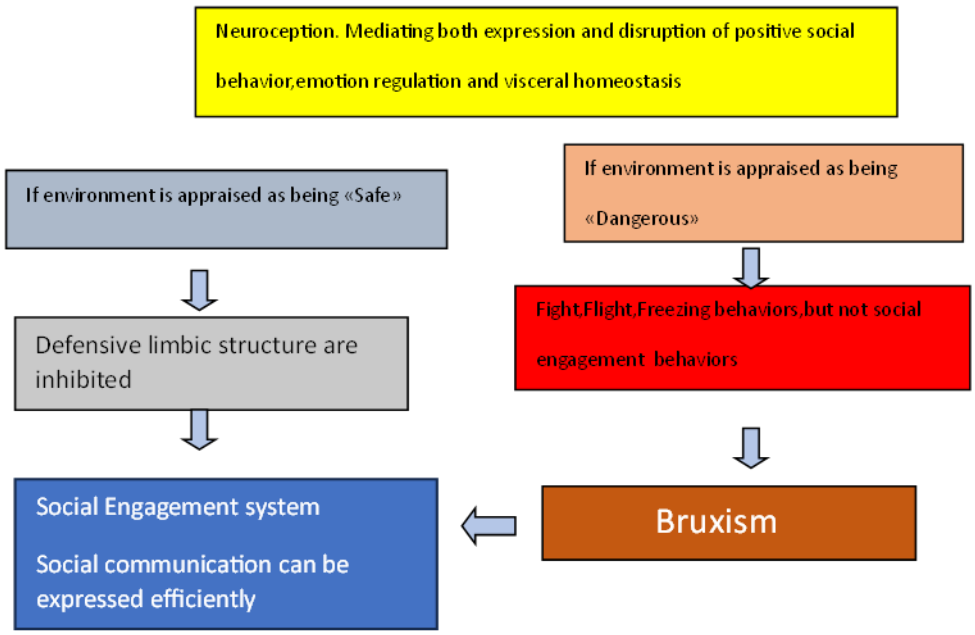
The look of love is in your eyes [gaze- orbicularis oculi]
The look your smile can't disguise [facial muscles]
The look of love is saying so much more [facial, neck, lip muscles]
Then just the words could ever say [prosody]
And what my heart has heard [vagal regulation of the heart, middle ear muscles, face-heart connection]
well, it takes my breath away [vagal regulation of the bronchi]
I can hardly wait to hold you Feel my arms around you
[immobilization without fear (not restraint)

Neuroception: A Subconscious System for Detecting Threat and Safety

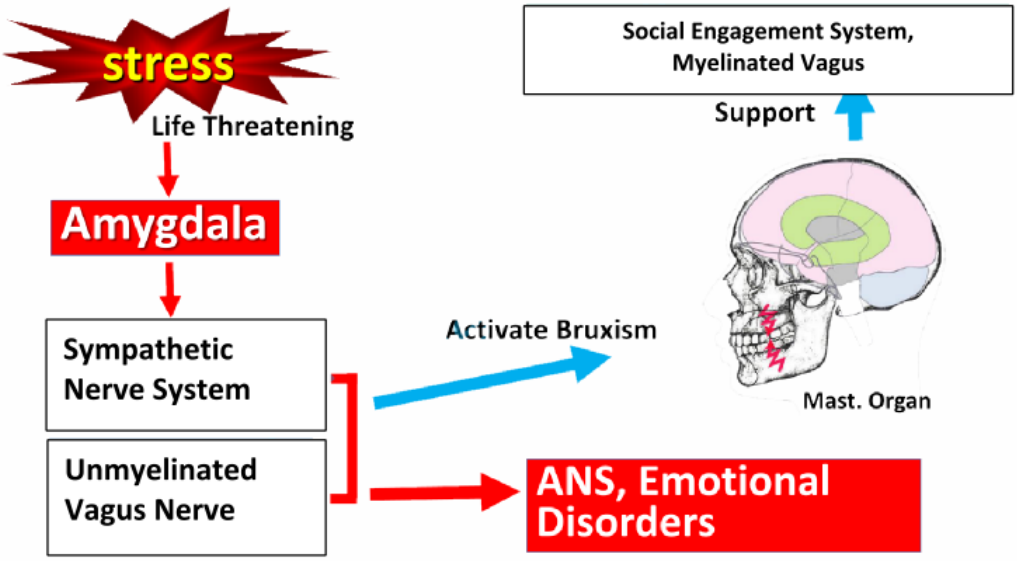
How neural circuits distinguish whether situations or people are safe, dangerous, or life-threatening. Because of our heritage as a species, neuroception takes place in primitive parts of the brain, without our conscious awareness.



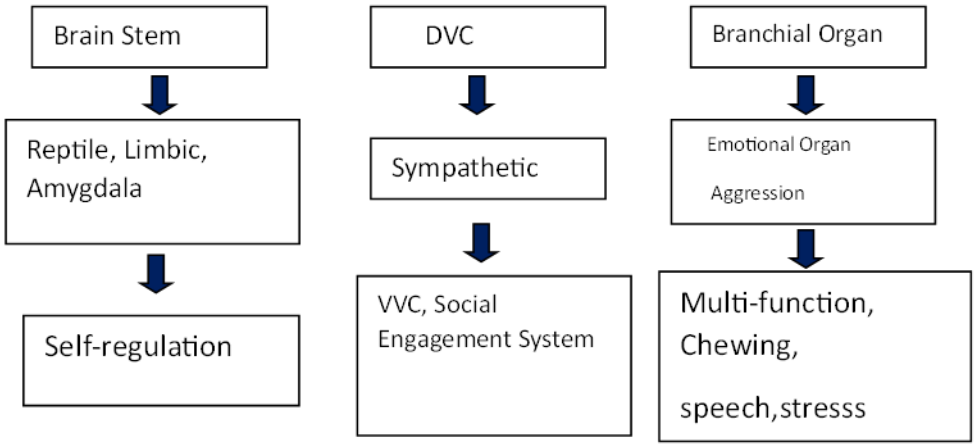
Note: The polyvagal theory places great importance on social engagement as a component of stay in healthy physically and mentally.



Stress

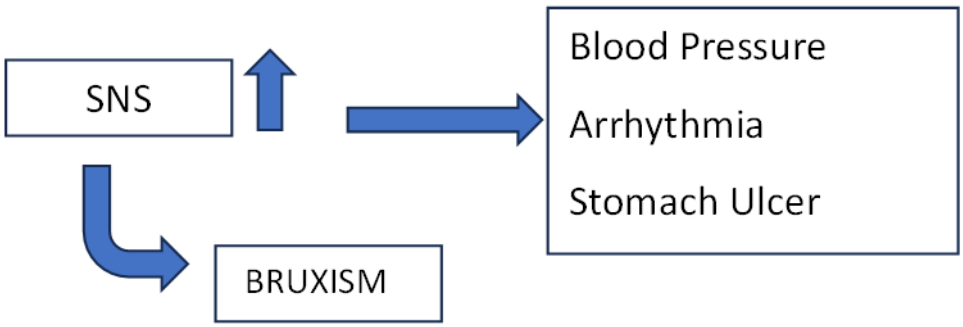


Polyvagal and Masticatory Organ. Evolutional Background



Features of the Masticatory Organ

- ➢ Branchial origin
- ➢ Autonomous function
- ➢ Close connection to Limbic system, esp. Amygdala
- ➢ Emotional Organ
- ➢ Parasympathetic dominance
- ➢ Stress relief



Sleep studies

- SNS activity is proceeded to onset of Bruxism
- Bruxism followed by increasing para-sympathetic nerve activity
- SNS => Bruxism event => PNS (93.3%)
- Bruxism attenuates Stress induced symptoms

Stress and Homeostasis: New Definition

New definition of stress and stress vulnerability can be derived and operationally defined based on the function of the ANS.

1. The rationale for evaluating specific autonomic variables as indices of stress.
2. The measurement technology necessary to measure the autonomic indices of stress online in a clinical setting.

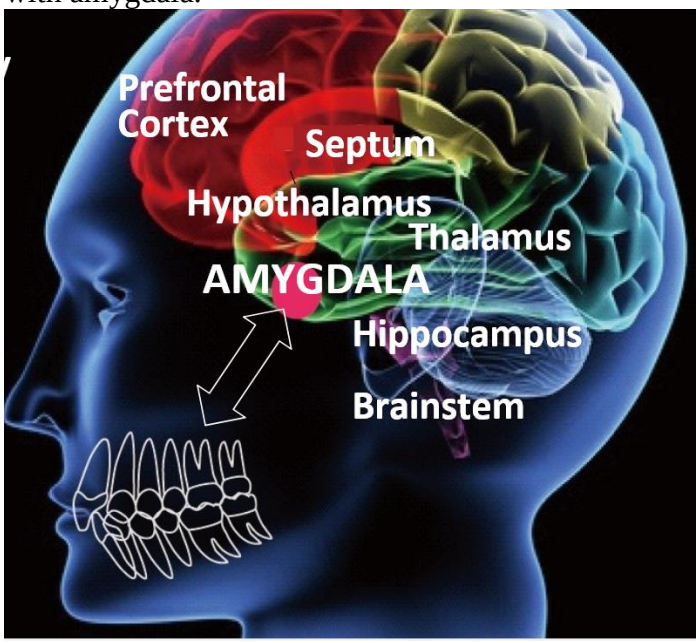
The ANS deals both with servicing the needs of the internal viscera and with responding to external Challenge. Perceptions and assumed threats to survival, independent of the actual physical characteristics of the stimulation, may promote a massive withdrawal of PNS tone and a reciprocal excitation of SNS tone.

Stress may be defined as the autonomic state that reflects a disruption of homeostasis. This state would be defined by the withdrawal of PNS tone. Thus, the degree of stress can be quantified on a physiological level.

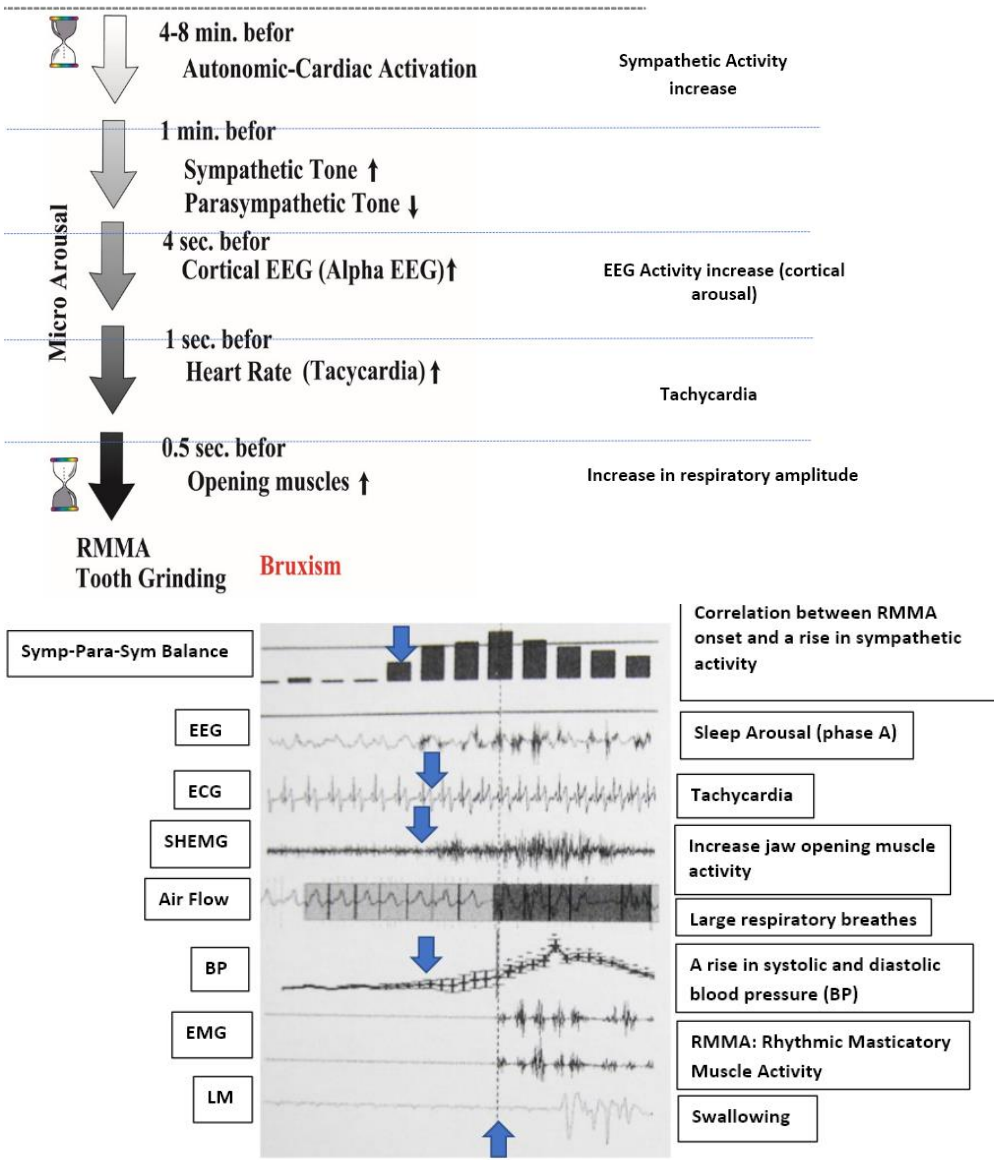
The most readily indexed measure of PNS activity is derived from the heart rate pattern. The amplitude of respiration sinus arrhythmia (RSA) provides a validated and easily obtainable index of PNS tone via the cardiac vagus.

Masticatory Organ and autonomic nervous system

Evolutionally, the masticatory organ maintains close connection with limbic system, especially with amygdala.

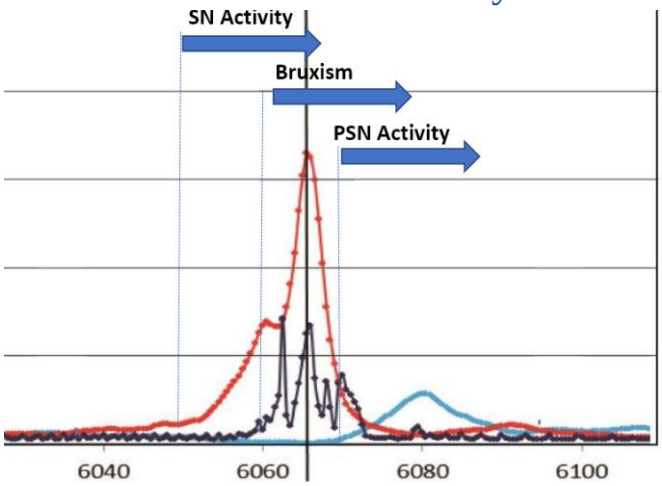


Occurrence of Bruxism Activity. RMMA/SB Episode



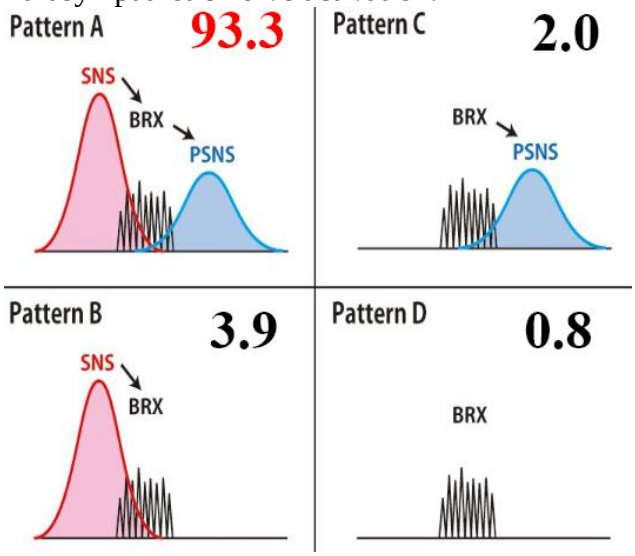
(EEG; Electroencephalogram, ECG; Electrocardiogram, LM; Laryngeal movement) (Carra MC et al. Dent Clin N Am, 2012)

Autonomic Nervous Activity and Onset of Sleep Bruxism

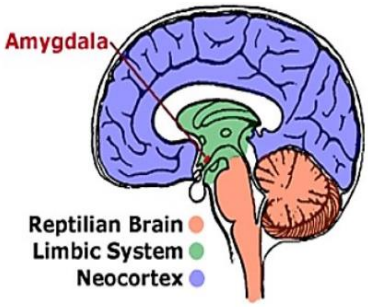


Four Patterns of Bruxism Occurrence. Effects of Bruxism Like Activity on the pathway of Stress.

Majority of bruxism events proceeded with Sympathetic nerve activation, and also followed by Parasympathetic nerve activation.



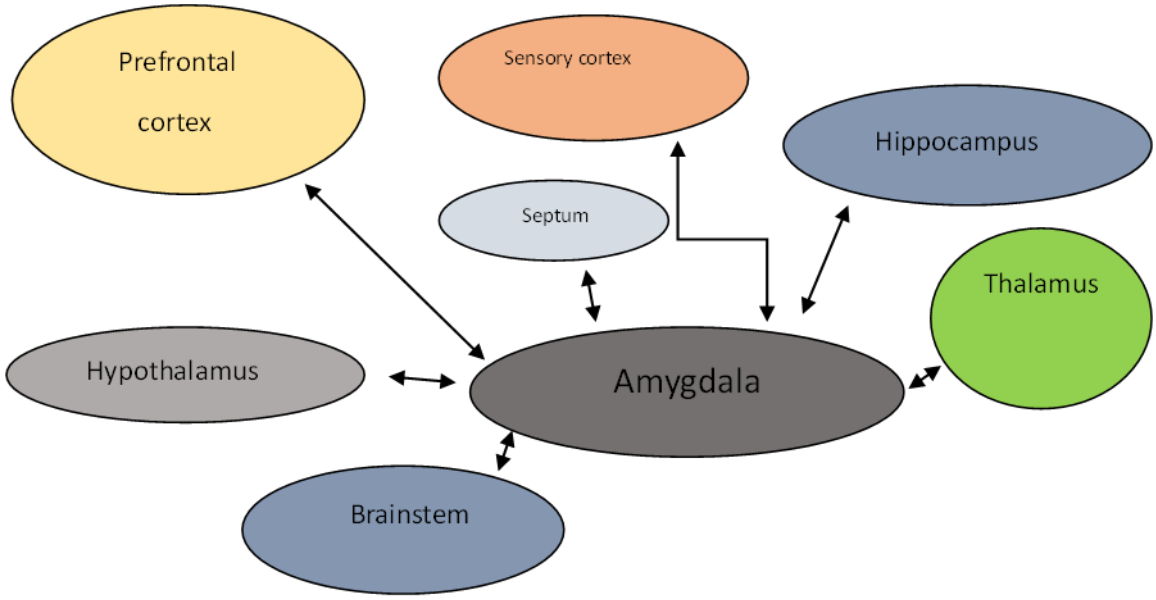
Experimental Study (Animal study). Bruxism like activity attenuates stress-induced Amygdala activity.



The Evolutionally Designed Brain.

Amygdala

The amygdala is a limbic system structure that is involved in many of our emotions and motivations, particularly those that are related to survival. It is involved in the processing of emotions such as fear, anger, and pleasure



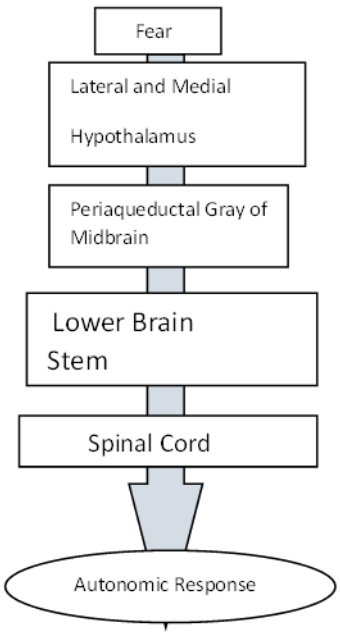
Amygdala and emotion

The amygdala is involved in several functions of the body including:

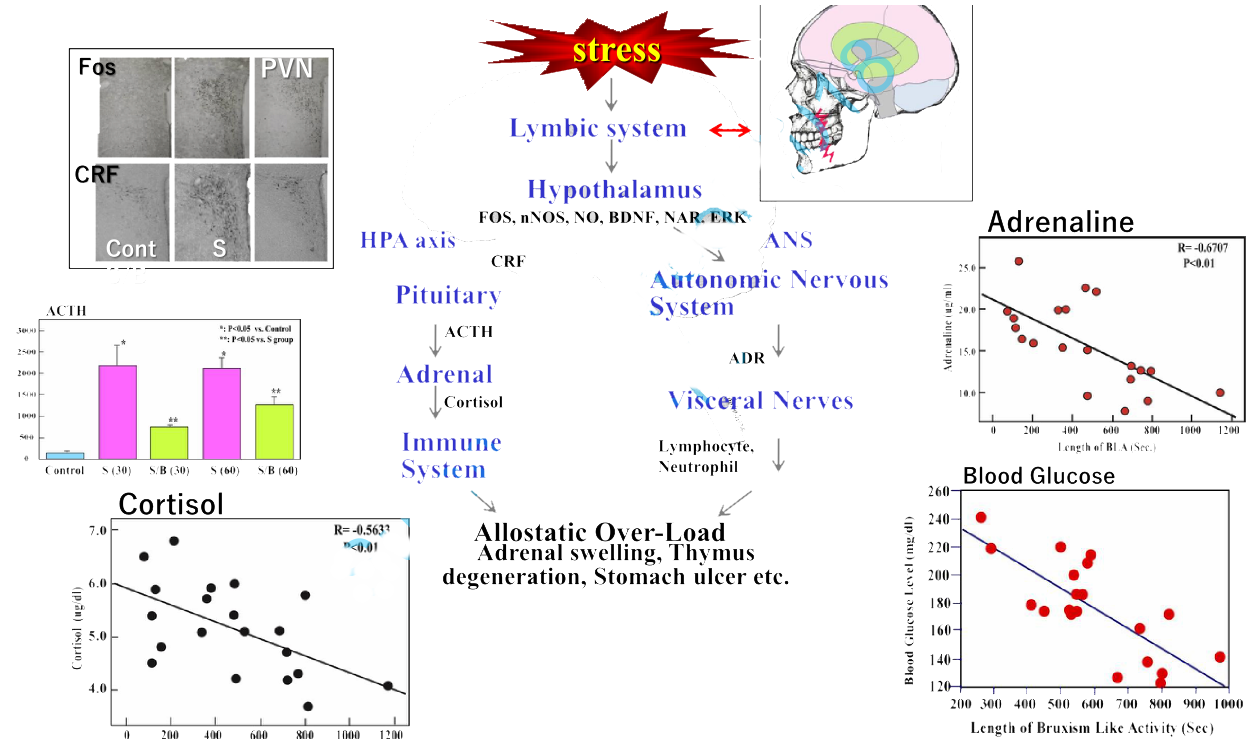
- Arousal
- Autonomic Responses Associated with Fear
- Emotional Responses
- Hormonal Secretions
- Memory

Fear

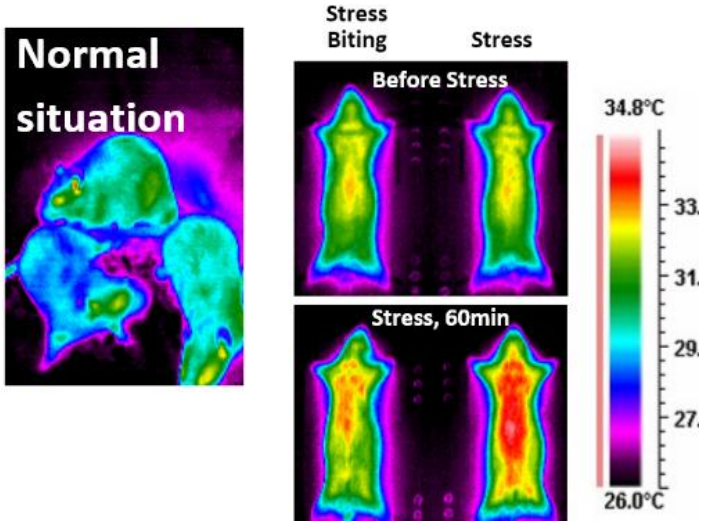
Fearisanemotionalandphysicalresponseto danger. Anxiety is a psychologicalresponsetosomethingthatisperceivedasdangerous. Anxiety can lead to panicattacks that occur when the amygdalasends signals that a person is in danger, even when there is no real threat.

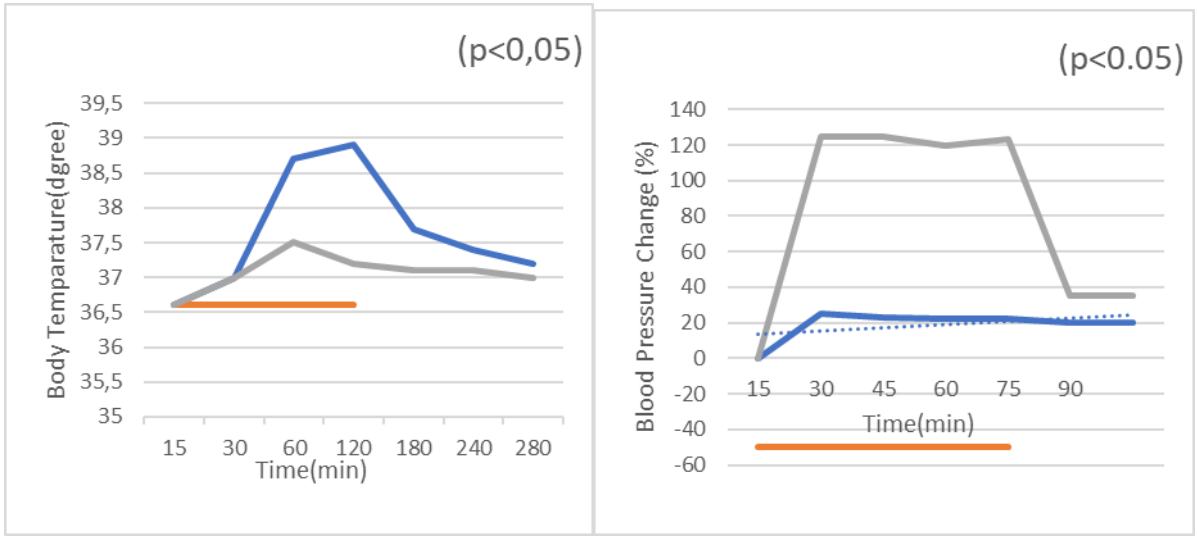


Benefits of Bruxism



Effects of bruxism like activity (Biting) on body temperature andblood pressure.

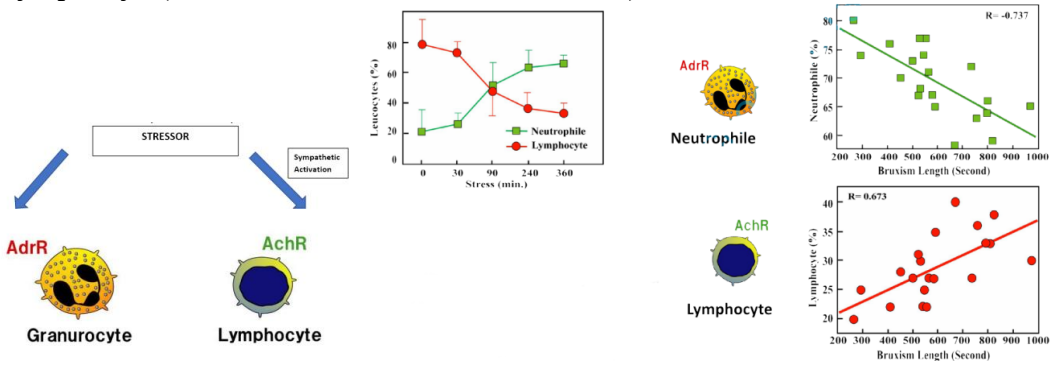




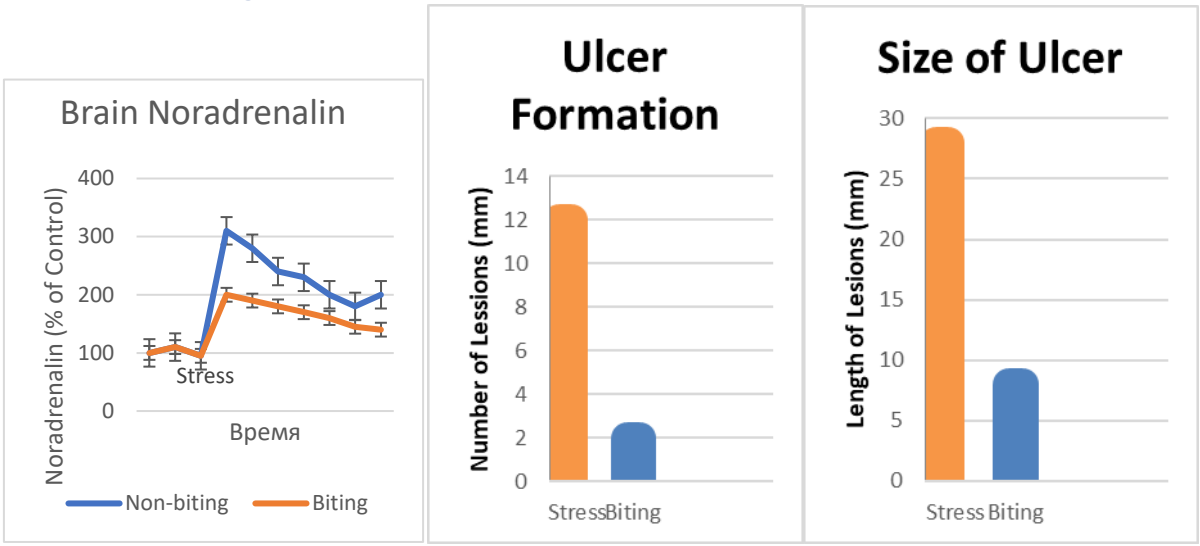
Okada et al. 2007, Brain Res.

12. Autonomic nervous system and neutrophile. Autonomic nervous system and leucocyte. Neutrophile & Lymphocyte.

Bruxism like activity prevents stress induced increase of Neutrophile and decrease ofLymphocyte(Sato C, et al., ClinOral Invest, 2009).

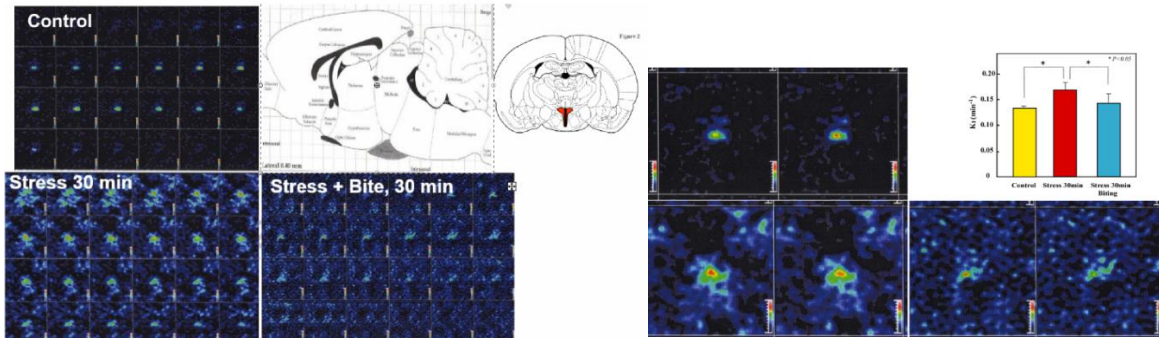


Effects of Biting on stress induced stomach ulcer formation

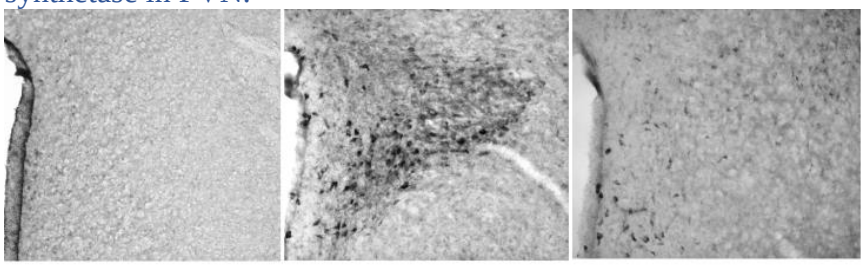


Tanaka T et al. PharmacolBiochemBehavi 59: 27, 1998

3D Imaging Analysis (Free Radical in Hypothalamus)



Effect of Stress and Biting on the nNOS expression in the Brain. Expression of neural nitric oxide synthetase in PVN.



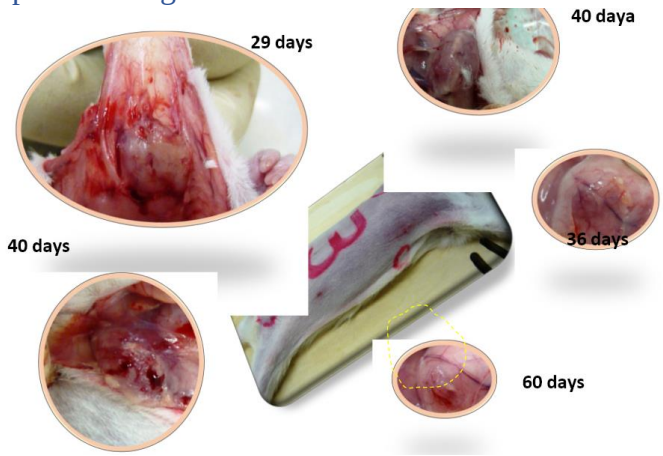
Control Stress 30min Stress +Biting, 30min

Autonomic Imbalance

Autonomic imbalance, characterized by a hyperactive sympathetic system and a hypoactive parasympathetic system, is associated with various pathological conditions. Autonomic imbalance may be a final common pathway to increased morbidity and mortality from a host of conditions and diseases (9,11).

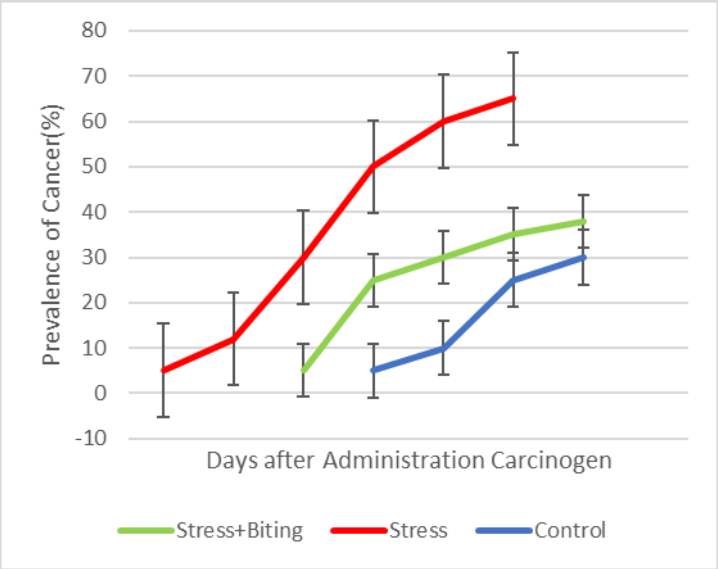
Active use of the masticatory organ like bruxism during stress exposure ameliorates sympathetic hyperactivity and stress-induced arrhythmias.

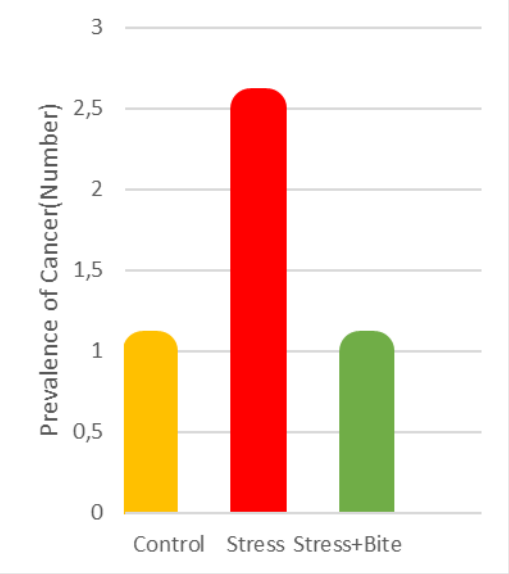
Carcinogenesis. Does Masticatory Activity reduce DMBA-Stress Induced? Multiple Carcinogenesis



(Kimura K. et al., Kanagawa Shigaku, Jpnese, 2011). Carcinogen Dimethylbenz(a)anthracene (DMBA)

Effect of Biting on DMBA+Stress Induced Carcinogenesis





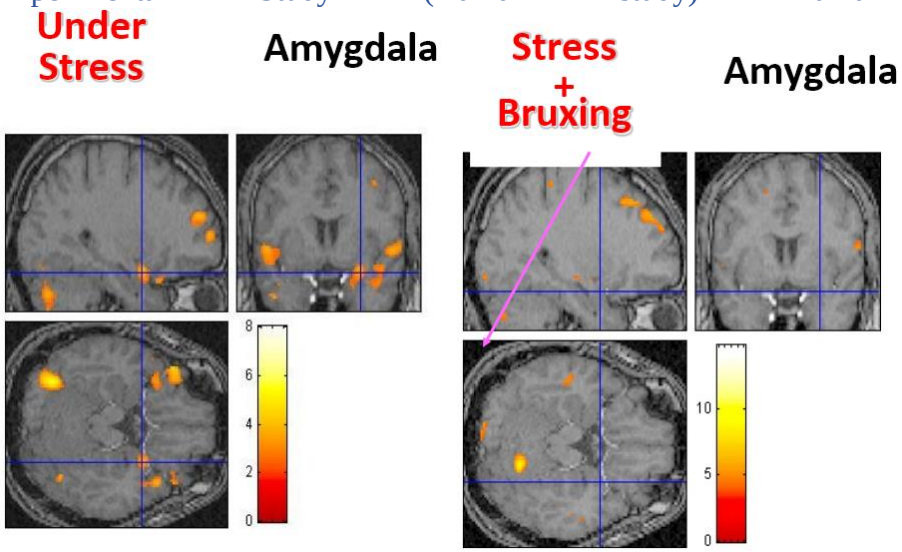
1. Required Days until cancer induction

	№	Required Days
CONTROL	31	50-56(53.5 +- 1.0)
STRESS	29	29-50(40.3+-1.3)
STRESS+Biting	9	45-56(49.6+-1.4)

2.Frequency of Carcinogenesis

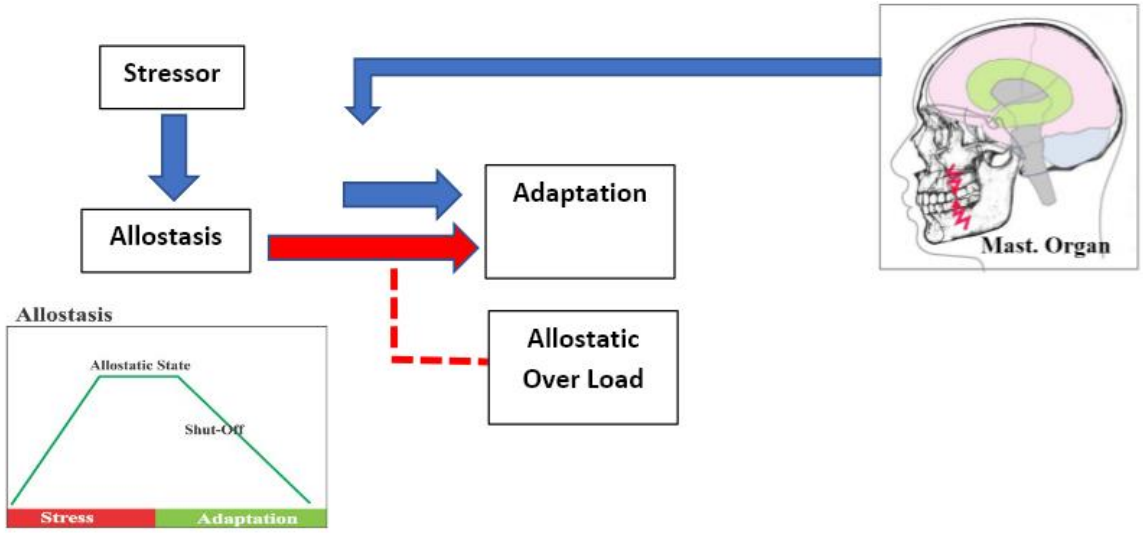
	№	Number of Carcinogenesis	Carcinogenesis %
CONTROL	31	10	32.3+-8.5
STRESS	29	21	72.4+_1.3
STRESS+Biting	9	9	37.5+-10.1

Experimental Study (Human study) Human Study (fMRI).



Effects of chewing on the Stress response of Amygdala

Allostasis and Masticatory Organ



Stress Management

The concept of stress management based on the psychological back-ground of Bruxism and the benefits attributable to masticatory muscle activity in attenuating stress related symptoms such as stomach ulcer.

The bruxism function of the masticatory organ is an emergency exit during periods of psychic overloading. Therefore, occlusion of the masticatory organ contributes significantly to an individual's ability to manage stress (12). The health of the masticatory organ depends significantly on occlusion, which must be of sufficient quality to successfully carry out its important role of manage stress.

Occlusion and the brain must function in harmony. Thus, with an understanding of the bruxism function of the masticatory organ, practitioner will be better equipped to fully diagnose dental disease and to design effective therapies to treat those disease (13).

Occlusion during Sleep. Dynamic Occlusion

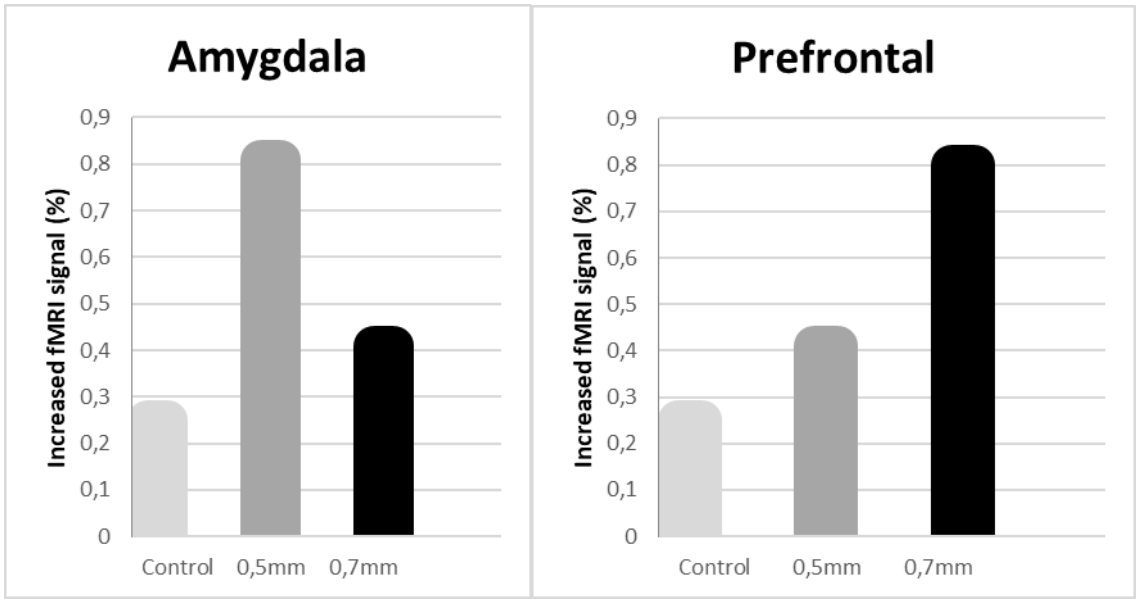
As sleep bruxism occurs in most persons, it could be said that bruxism is a physiological activity rather than pathological activity (14). However, tremendous occlusal forces that are sometime significantly greater than conscious efforts by an individual are applied to teeth, supporting tissues and TM joint during sleep bruxism (Paesani D., Yachida W.2012).

Consequently, significant loads from bruxism can have harmful effects on oral tissues and structures. Thus, every dentist must have sufficient knowledge of the fundamental aspects of occlusion based on bruxism function and treat this condition on a routine basis in their practice.

Is it possible to control bruxism activity?

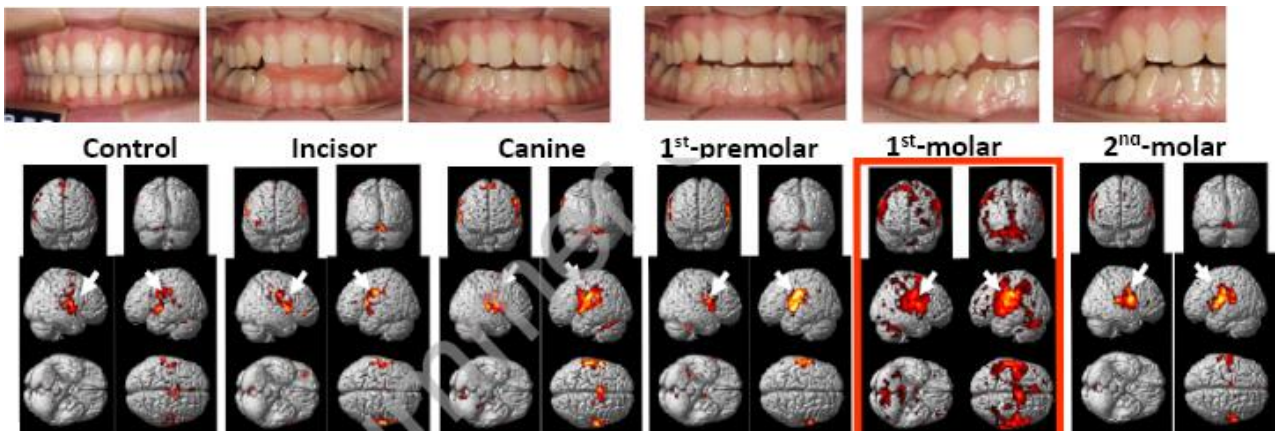
Experimental Studies. Molar contact during grinding increases muscle activity.

Comparison of Brain Activation via Tooth Stimulation (NIRS Study) (Shimazaki T et al., J Dent Res 91(8):759-763, 2012)

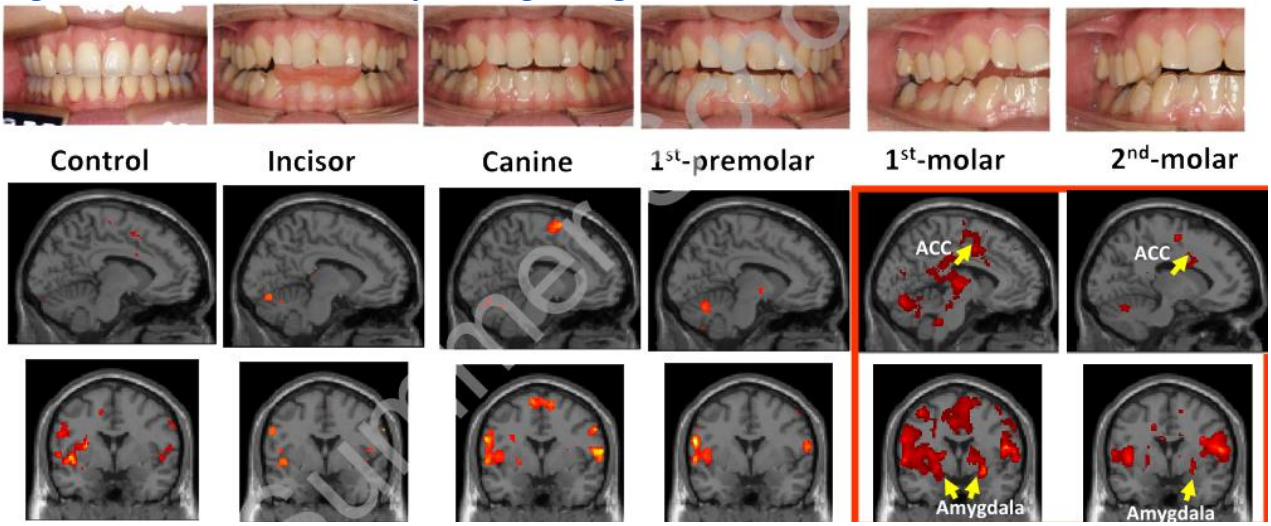


Brain activity elicited by grinding with different tooth contact: fMRI study.

Sensory and motor cortexes in both hemispheres were activated. First molar grinding elicited largest brain activation.



Brain activity elicited by grinding with different tooth contact: fMRI. Study Amygdala & Anterior cingulate cortex were activated by molar grinding.

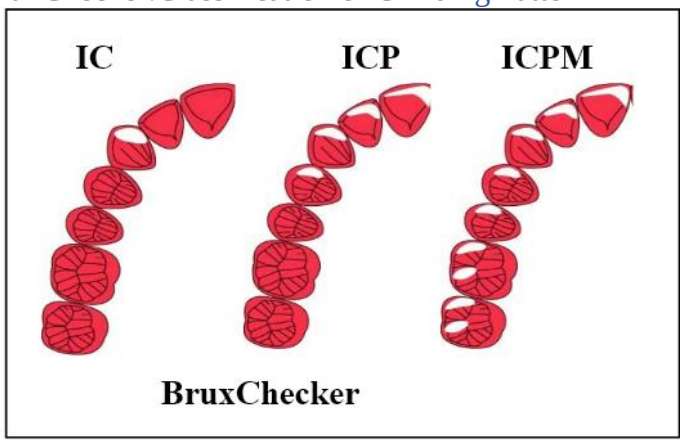


Shimazaki T et al., J Dent Res.

Indicating

First molars are the most sensitive to tactile force in the brain activation.
Strong contacts in the molar region cause occlusal discomfort and activate limbic system.
These data could be useful for understanding about the neural mechanism of individual tooth underlying occlusal theories.

BruxChecker.Classification of Grinding Pattern



Comparison of tooth contact evaluated by BruxChecker in groups of low, moderate, and high muscle activity groups during Sleep bruxism.

Tooth Contact	Low SB Actity Group(n=18 sides) Number (%)		Moderate SB Activity (n=14 sides) Number (%)		High SB Activity Group(n=8 sides) Number (%)	
IC	5	27.8	3	21.4	1	12.5
ICP	9	50.0	7	56.0	2	25.0
ICPM	4	22.2	4	28.6	5	62.5
MG	7	38.9	8	57.1	4	50.0

IC: incisor-canine contact, ICP: incisor-canine-premolar contact, ICPM: incisor-canine-premolar-molar contact, MG: mediotrusive grinding.

Comparison of Cusp Facet and Lingual Facet groups.

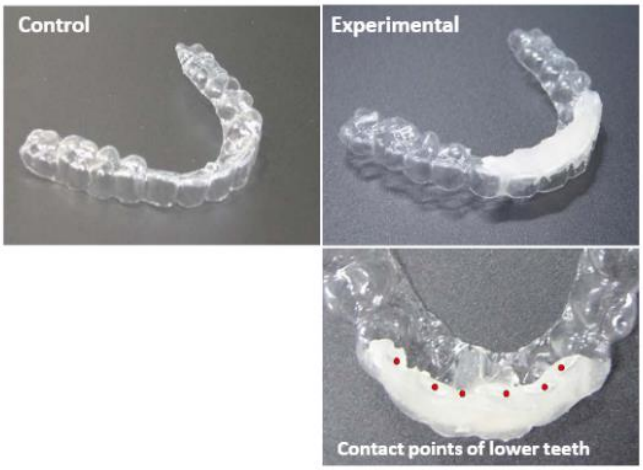
Relationship between the Cusp tip or Lingual facet and the guidance elements of occlusion.

1. Sagittal condylar inclination 5mm
2. Canine occlusal guidance (measurement of F1-F2)
3. Bruxism facet inclination
4. Relative canine occlusal guidance (calculated as SCI 5mm-COG)

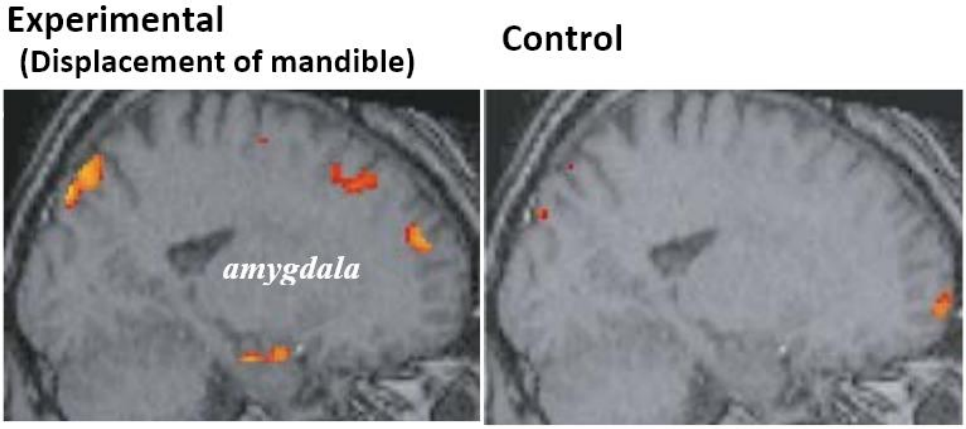
* Statistically significant differences among them, at $P<0.05$

Experimental mandibular retrusive displacement and clenching impact brain activities

displacement increases Limbic system activity. Bruxism attenuates fire ring Limbic system

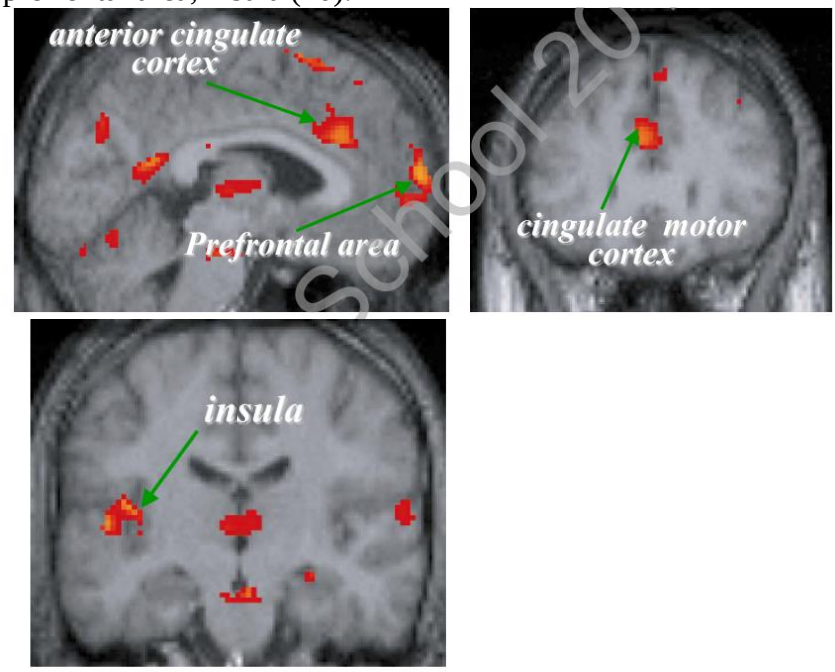


Brain regions activated during clench. Experimentally retruded mandibular position. Clenching at Displaced mandibular position, Group analysis (n=8).



Mandibular displacement+Clenching

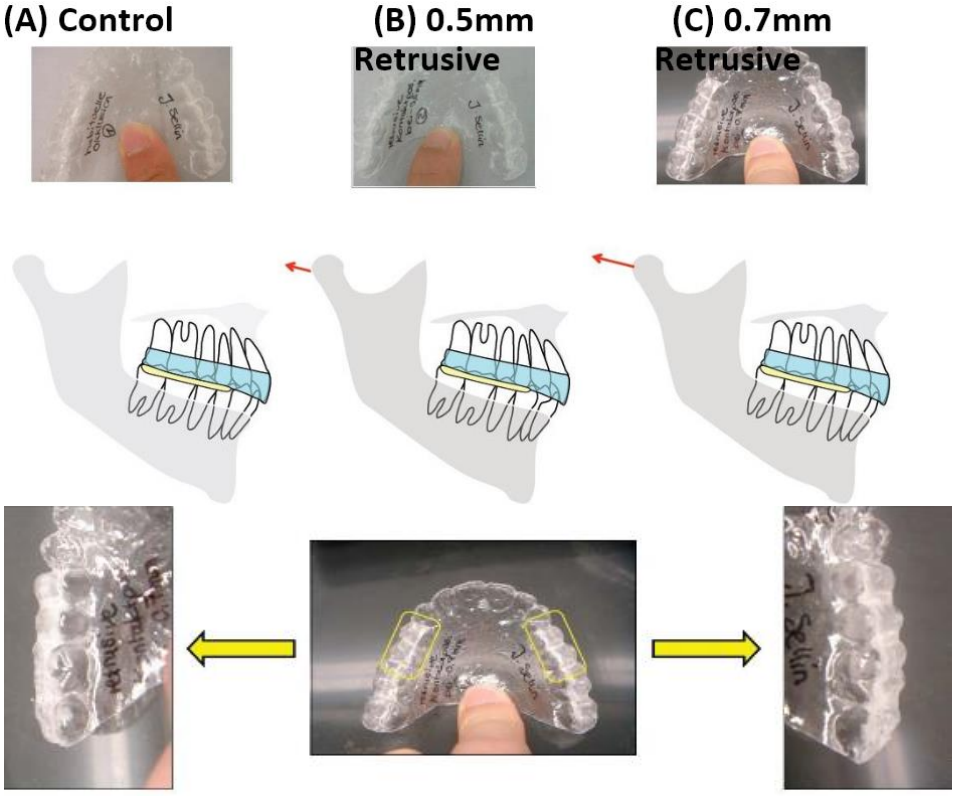
Mandibular retrusive displacement and clenching impact brain activities. Clenching at displaced mandibular position activates limbic system, anterior cingulate cortex, cingulate motor cortex, prefrontal area, insula (10).



2nd fMRI Study, Institute of Life and Brain, Bonn Germany

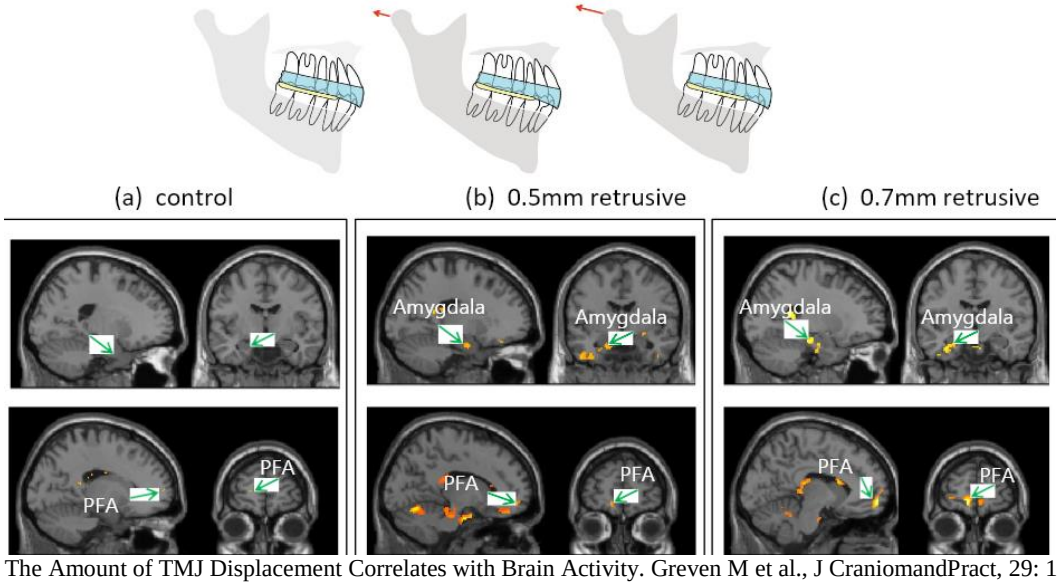
Condylar Displacement Model. Different amount of Condylar Displacement0.5mm 0.7mm. The Amount of TMJ Displacement Correlates with Brain Activity. Greven M. et al., J Craniomandibular Pract., 29: 1-6, 2011

Mandibular/Condylar Displacement Model



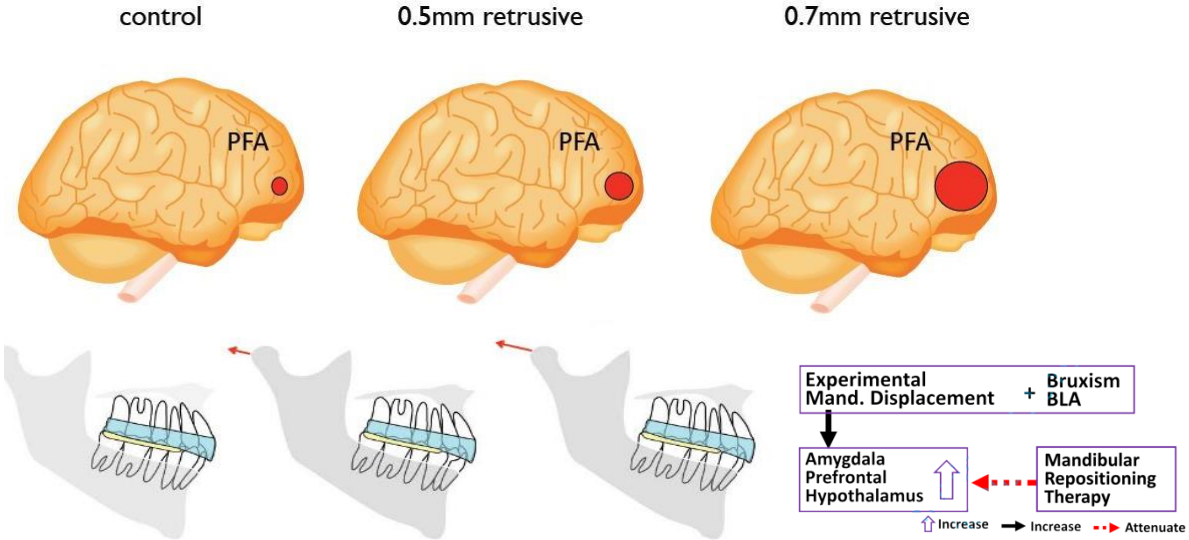
Detailed view of maxillary splint:
manipulative area on the maxillary splint executed by self-curing resin was the 1st and 2nd premolar region exclusively

Displaced Mandibular Position and Bruxism



The Amount of TMJ Displacement Correlates with Brain Activity. Greven M et al., J CraniomandPract, 29: 1-6, 2011

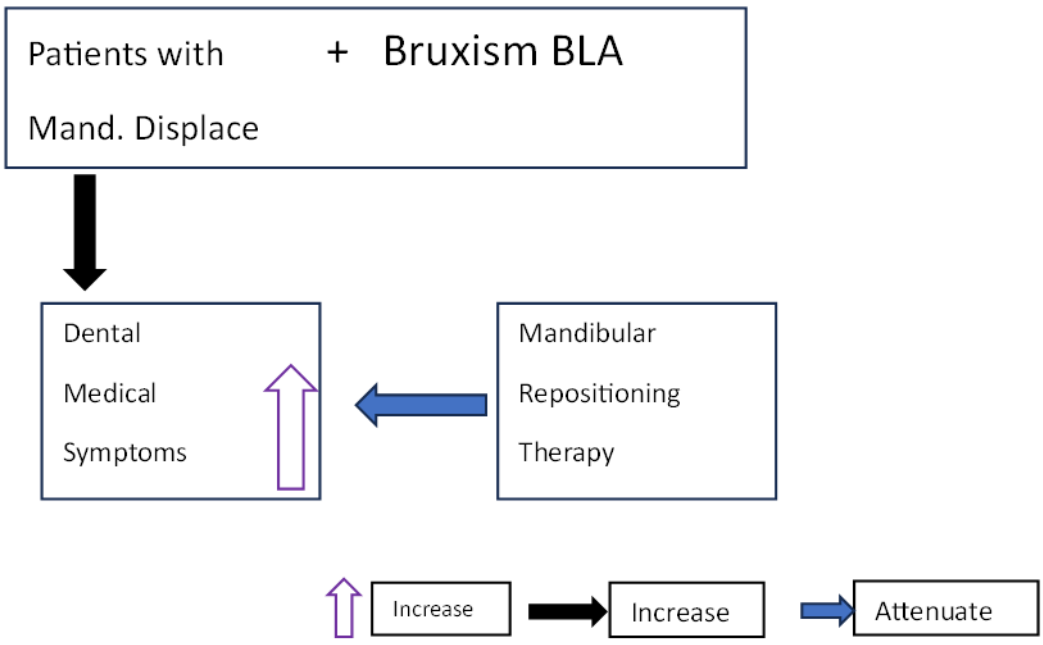
The Mandibular displacement affects the amount of brain activity. Importance of RP-TRP Concept. DRP affects to emotional status through Amygdala activation.

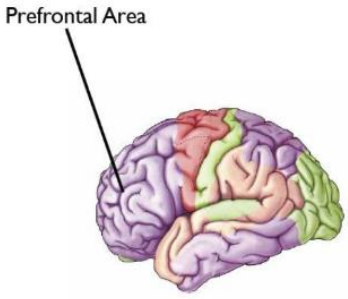


Prefrontal Area

The frontal cortex is involved in the most extensive cerebral function including ideological thought, judgment, expectation of behavior procedure, social action. It is closely associated with emotional reaction and behavior (Limbic system, especially Amygdala).

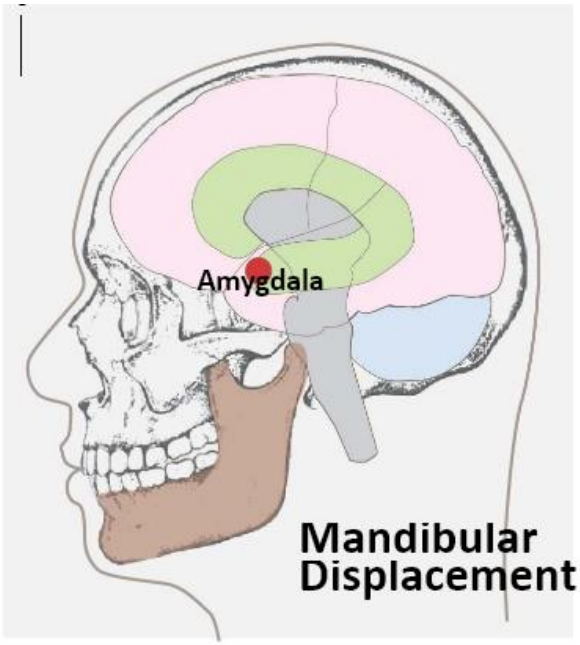
Clinical studies

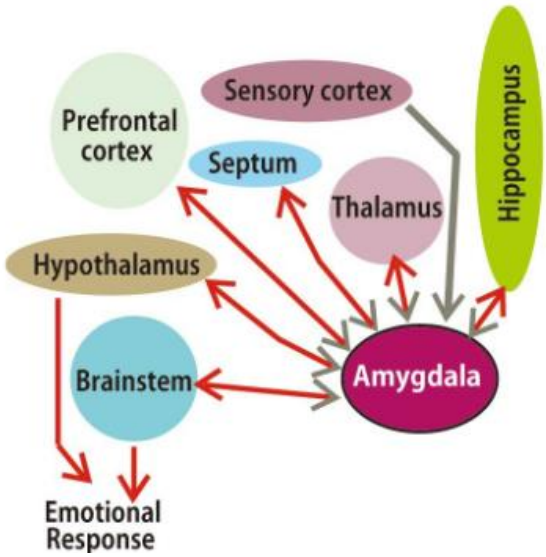


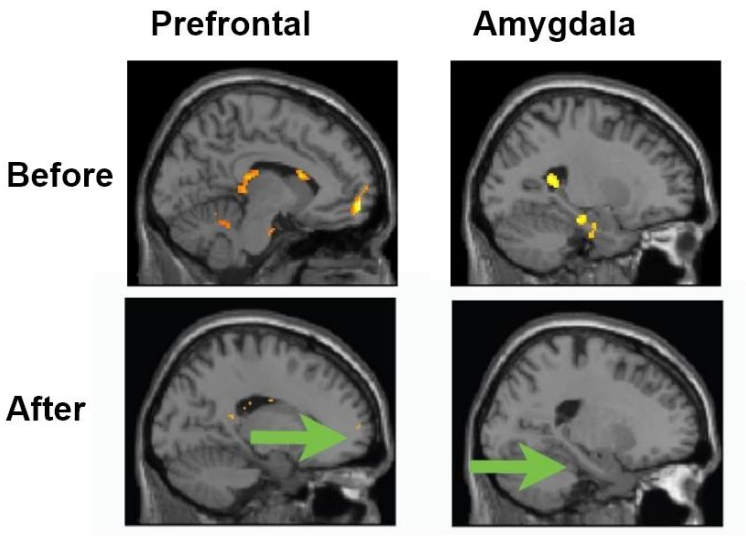


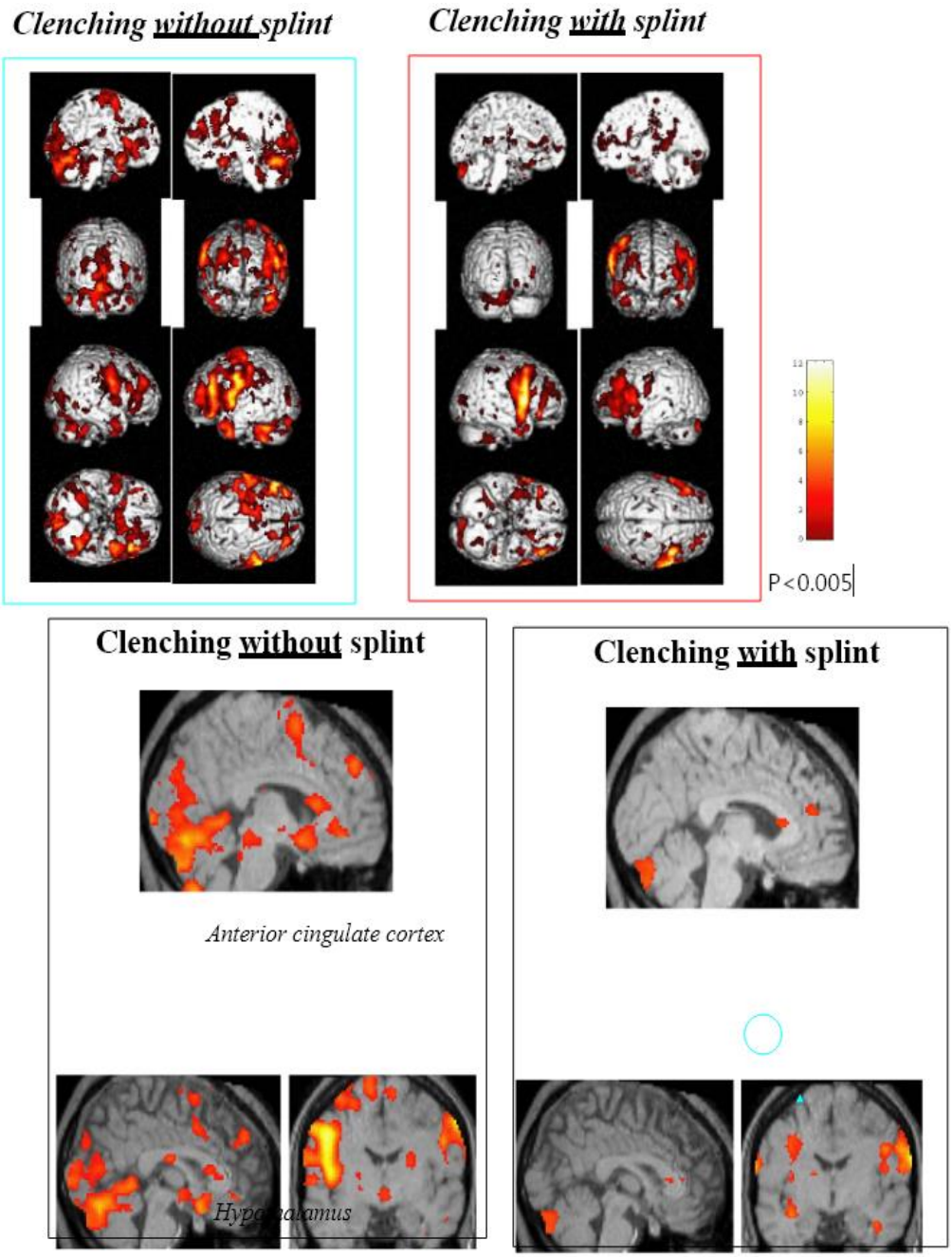
- Patient with mandibular displacement complain many ANS symptoms
- Mandibular repositioning therapy provides decreasing ANS symptoms

Occlusion and TMD. DRP affects to emotional status through Amygdala activation (5,6,7,8,9).

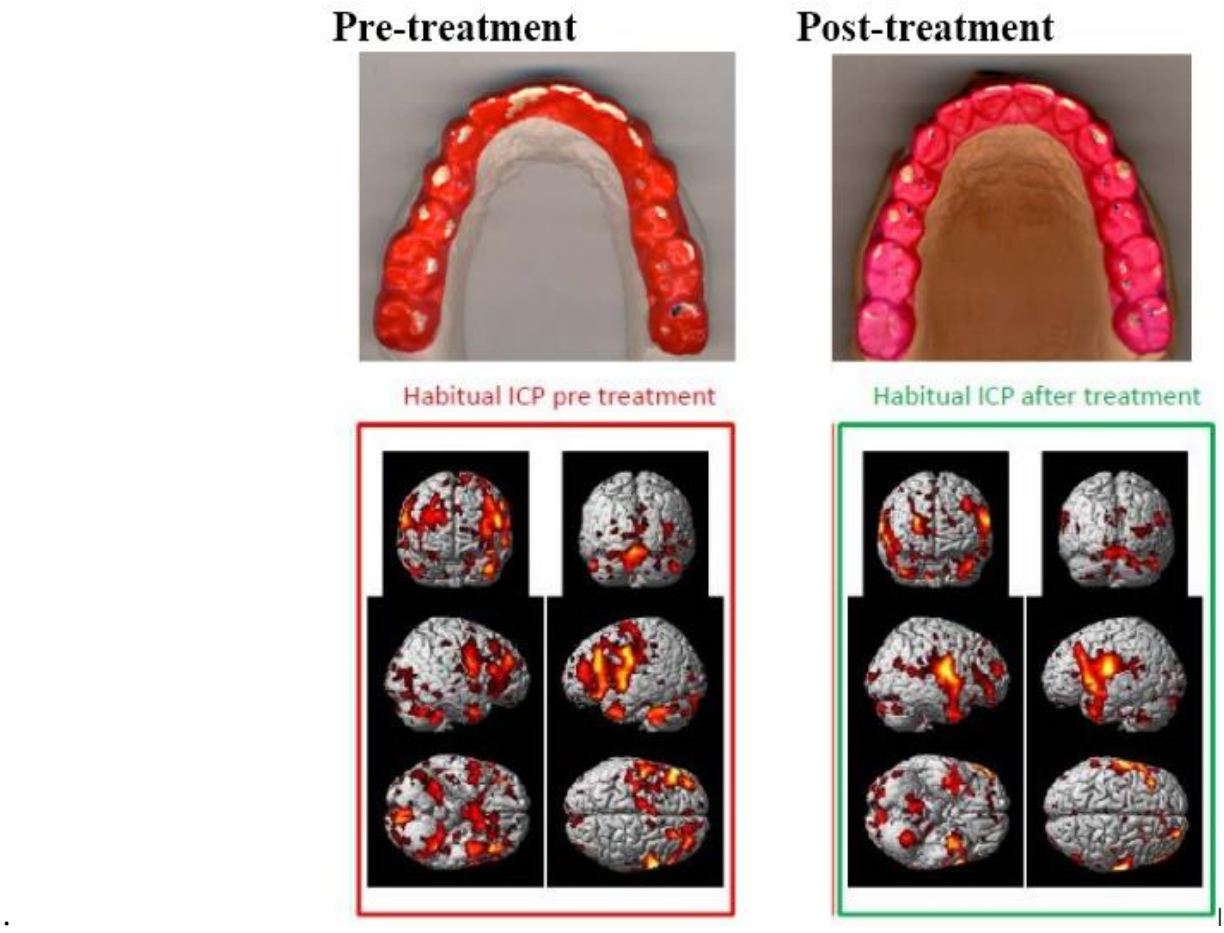


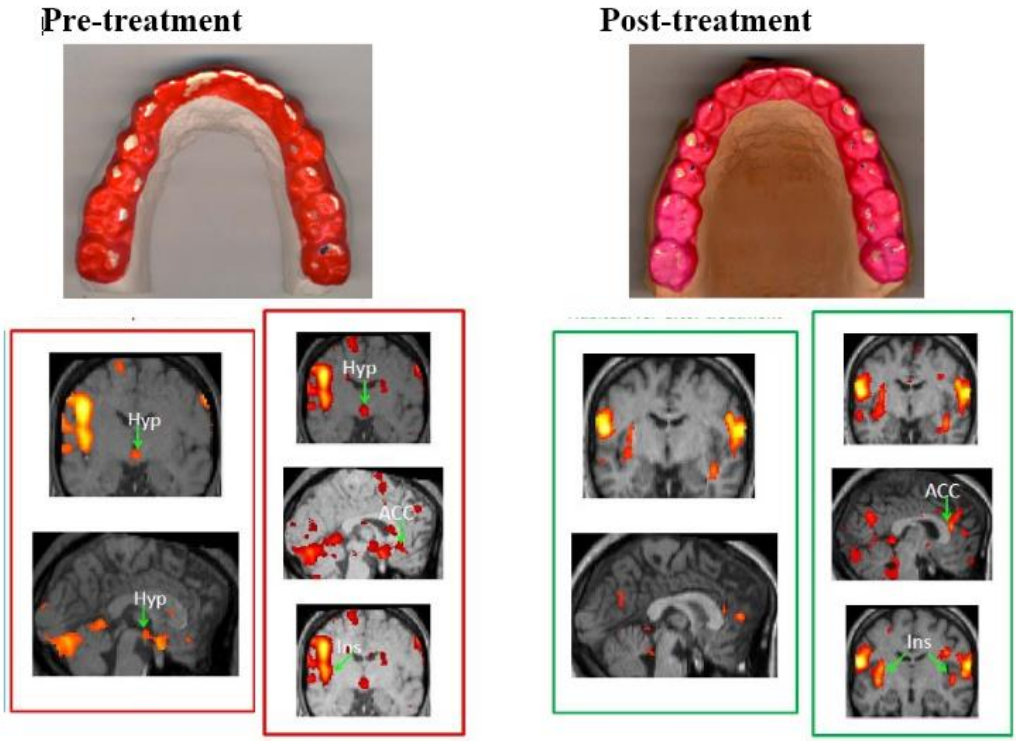






Importance of RP-TRP Concept Brain Activity (fMRI).
Mandibular reposition using splint reduces total brain activity during clench.





17.Conclusion

- Bruxism has a great benefit in attenuating stress related symptoms, although some bruxism shows harmful effect on oral tissues.
- Thus, occlusion concept based on bruxism function and treat the conditions on a routine basis are very important.

Hypersensitive people.
These are people (10-15% of the world's population), this is a variation of the norm, not a pathology. These are, like people with class III dentitions, and they are also 10-15 percent of the world's population.
How do they differ:
DOES
1. D- depth– the depth of information processing. The tendency to observe and reflect before acting. Process information in detail. More often than not, unconsciously.
2. O- overstimulation. Excessive nervousness. Easily achieved overexcitation. When there is a lot of attention on everything at once, a person quickly gets tired of everything faster than ordinary people.
3. E-emphasis- emotional reactions and empathy.
4. S- sensitive sensing to subtle. Notices nuances.
Behavior can change. It's not a constant.
When we were talking about teeth and pain, you said that it started to hurt right at that moment. You have increased the activity of the insular zone and the work of mirror neurons. They copy what we talk about, or what we see, or what we hear. These mirror neurons, on the one hand, copy what you hear and see, and at the same time they pick up on the mood and feelings and thoughts of other people about you like radars. In a simple way, "read information from the space around you."
In your case, emotion is the center of wisdom.
All information processing goes through a very pronounced emotional reaction. And very deeply. And that's exactly it. He is a motivator. The best guide to joy, happiness and victory.
5. You are able to notice the non-verbal signals of others. And their thoughts and feelings due to the increased work of the senses. Through the sense of smell, sight, hearing, touch, taste organs. The areas of the brain responsible for these organs are similar to those activated during information processing in a hypersensitive person. Hence O and E – increased irritability and emotionality. This is a variation of the norm. That's how the brain works.

What needs to be done?
1. Self-discovery
2. Reframing
3. Healing
4. To know oneself in all roles in this world (observation diary, in relationships, as a parent, as an inner child, at work)
Further than summary from books.
The key thing is to choose what suits you at all stages of life and make your own formula. This condition can completely go away or translate into a comfortable one for yourself.

There is increased nervousness, it is described by the DOES syndrome. Any external stimulus - screaming from neighbors, swearing, loud music, lots of people, cars, a lot of communication with relatives — all this is irritating, it causes nervousness.
1. An attempt to fit into a familiar society causes internal conflict due to differences and inability to tolerate "society".
2. Analyze your life goals: the main one is peace of mind. Life is not eternal, and in the end, you will leave everything. You can't take money, a partner, or a position with you when you leave your body. Therefore, to know yourself and make the necessary changes for peace and happiness here and now.

3. Change your habits. Make a list of what causes pain and write down new methods that you are going to use to get rid of it. As soon as you start winning small victories, your resolve will strengthen.
4. Visualization and installations.
5. Learn to get out of situations that reinforce bad habits and reinforce low self-esteem. The home and work environment are the most important factors determining the ability to establish a peaceful life.
6. Surround yourself with a harmonious atmosphere and change the environment that causes anxiety, or isolate yourself from the source of overexertion.
7. You can replace a bad habit with a good one in six months. In a few months, meditation becomes as much an integral part of life as brushing your teeth in the morning.
8. Replace old habits with enjoyable and nurturing activities.
9. Enjoy new survival strategies.
10. Long-term planning. Reduce the impact of irritants: earplugs or headphones, if you know that you will get into a noisy environment, so as not to be overwhelmed by a wave of social irritants.
11. Look inside yourself to determine whether your behavior leads to harmony or unnecessary tension. To explore your soul and emotions, and new ways to find peace and joy in life.
12. Meditation. The mode of the day.
13. Daily routine: morning: making a morning routine. Such a structure will set the tone for the whole day, and the evening routine will affect the quality of sleep. Concentration exercises in the morning will prepare you to cope with irritants until the evening.
14. Physical exercises: Do some stretching exercises, yoga, or exercise, and your body will receive an energy boost. Or yoga will give you a state of calm, improve hormone metabolism, and reduce stress and related disorders (Lad, 1984). Perhaps hatha yoga, it calms the body and mind, which is very important when preparing for meditation. (walking is a dynamic meditation option, perhaps it will suit you).
15. Calm your mind after you have energized your body, devote 15 minutes to
16. Thoughts and a "jumping brain" and rethinking different situations. Calm your feelings and deal with the rush.
17. Correctly use relaxation techniques for all five senses: hearing, touch, sight, taste and smell. Not to completely get rid of irritants, but to minimize their negative impact on each of the senses.
18. Massage. But an oversensitive person reads space and also massage therapist programs. A massage chair is better. Self-massage. Or percussion massage. There are a lot of devices either in the Bork company, or all sorts on marketplaces.
19. To test / invent self-help Tools: from beating the drum, but better SPA and Relaxation. And look at the pupils. They should not narrow down. And this is the "formula of the state". We take a photo, look at ourselves and ask a question.: «what should I do now to get into a state of peace or joy?
20. Make time for hugs with family. It is very important. You just need to be hugged. To make you feel. Make it a rule with your family. For example, the time before bedtime. And so on. And say just hugs without unnecessary words. This will increase the level of happiness hormones. Hugs and affection, that's what Mom didn't give. This is the key. A sense of security. You need a person (and first of all it's you, if you learn how, this is the most ideal scenario, everything else is crutches and codependency) who will be kind to you. And not in return for children, a restaurant, money, but just like that. Perfect: self-care and love. No one will take it away or manipulate it. Or a dog, a cat, or an animal. You need unconditional love.
21. Unexpected hugs probably won't suit you. Discuss everything in advance with family members so that personal boundaries are not violated.
22. Food - warm food, cooked. Not unprocessed fruits and vegetables. Not cold water. This is the energy of cold. It won't do for you. In winter.
23. Chamomile tea. Exclude coffee, soda, and alcohol.
24. Because hypersensitivity is your calling.

25. Sensitive to stimuli = fatigue, it is important to take breaks and arrange mini-retreats at least twice a week, find time for relaxation and a couple of hours on a weekday.
26. Mark in the calendar the days that you dedicate to yourself. However, make sure that you don't feel overwhelmed by the appearance of another task in your diary.
27. Organize longer retreats once or twice a year (all day on weekdays or all weekend). and in a place where you feel calm. Ask your family not to be disturbed. If it is impossible to retire in the house, find another place where you can take care of yourself.
28. Walk slowly and concentrate on the birdsong, the noise of the waterfall. Observe what you see, explore the palette of different colors, the sky or the green grass. Then realize what you are touching.
29. Conversation: Probably having to keep up a conversation is the most annoying activity for hypersensitive people. Ideally, in silence.
30. In the company of other people, you don't have to constantly express your opinion or defend yourself. Relax and just watch those who share their beliefs. In fact, such a pastime turns into meditation. You can explain to others that silence helps you relax your nervous system, freeing you from the expectation of being involved in active verbal interactions. When your loved ones notice how much calmer you have become, they may want to imitate you.

1. It is difficult for you to react quickly to the statements of the interlocutor, because the information is being processed slowly. And an effective way to reduce irritation during a tense conversation or argument is called "pausing for five seconds" before responding to the other person.
32. When someone is driven crazy by the need to pronounce words slowly or listen to people who speak slowly, they demonstrate that they are far from harmonious. Experiencing a mental imbalance, they wish the same for you, which will worsen the condition, for example, an endless conversation at a fast pace.
33. Mindful eating –slowly and calmly. High-quality and warm food.
34. The letter!!!!! Write all the feelings and emotions on paper.
35. Phone conversations are a serious source of stress for hypersensitive people. And the form of written communication is better.

Resume
1. How to calm the feelings of HSV
• Avoid unpleasant sounds by using relaxing music or earplugs.
• Attend regular massage sessions or do it yourself.
• Reduce the time spent in front of a TV or computer screen, and admire beautiful paintings or nature more often.
• Reduce your caffeine intake by drinking herbal teas and pure water instead of coffee, tea, and soda.
• Eat warm, energizing food.
• Try to inhale the smells of essential oils or incense.
• Conduct mini-retreats twice a week or longer — several times a year.
2. Important aspects in the fight against haste
• Listen to soothing music and drive slowly.
• Avoid driving during rush hour.
When stopping at a red light or in traffic jams, practice relaxation techniques.
• Regularly apply meditation when walking, walking in nature to stay calm and focus on the current moment.
• Regularly apply meditation when walking, walking in nature to stay calm and focus on the current moment.
• Try to talk slowly, sometimes be silent.

• Before speaking out during a tense conversation, wait five seconds to avoid making annoying arguments.
• Try to eat consciously at least once a week, without being distracted by reading, watching TV, or talking.
Try to write or type texts on the computer slowly.
• Turn a phone call into a relaxation signal, try not to answer immediately, using precious moments for deep relaxation.
• Minimize the use of your computer and phone, and watch TV less often.

3. Supplements, vitamins and herbs. They will help you stay calm and mitigate negative physiological reactions to emotions. Be sure to inform the doctor that you have hypersensitivity.
Stress reduction diet (ideally follow the recommendations of the Genotec).
4. Increase consumption of organic vegetables and fruits, whole grains, low-fat protein products, omega-3 fatty acids found in salmon, linseed oil and fish oil, as well as herbal teas.
6. Reduce sugar, preservatives, salt, caffeine, high-glycemic foods and semi-finished products in the diet.
7. For lunch and dinner, lightly boiled organic vegetables or salads made from raw vegetables and fruits.
Sleep. Our culture provokes sleep problems
Insomnia is a symptom of an oversensitive person's attempts to combine the incongruous: to adjust their nervous system to a crazy society. This is an attempt to adapt to the foundations of our crazy world.

Different stages of sleep. There are five stages of sleep: two phases — light sleep, two — deep and dreamy sleep. The first stage is the borderline state between wakefulness and sleep, where theta brain waves (as in a state of deep relaxation) last only a few minutes. The second stage is light sleep — in fact, the beginning of real sleep. People spend half the night in the second stage of light sleep.
Deep sleep (stages 3 and 4) creates delta waves of brain activity when blood pressure and pulse are at their lowest, most often occurring at the beginning of the night and at this time the immune system is activated. However, stress hormones (such as adrenaline), produced during the day as a result of excessive irritation, continue to be released in the body. If you don't reach the third and fourth stages of sleep at night, your immune system is likely to weaken.
REM (Rapid Eye Movement, REM sleep), or dreaming, is a milder stage that resembles wakefulness. There are four ninety-minute sleep cycles per night. During the first half of the night, deep sleep cycles are longer and REM is minimal; in the second half, the opposite is true.
The app to watch the phases of deep sleep is Sleep Cycle.
Try not to sleep for more than 30 minutes during the day. A short nap is better than coffee: it will increase productivity and improve mood for the rest of the day.
Go to bed early.
Rejection of the media.

Turn off the day. After eight or nine o'clock in the evening, turn off your mobile phone, TV and computer and disconnect from the events of the day. The evening routine consists mainly of soothing activities: reading uplifting books, meditation, massage or taking a bath. Don't get into arguments in the evening. Instead of thinking about the problem, write its solution on paper.
A gratitude diary will give you joy.
Turn the bedroom into a cradle, a quiet, darkened and peaceful room to relieve daytime stress. Such a safe environment, reminiscent of a cradle, will help adults who are hypersensitive to sleep better. To feel safe. Because of the fear of possible danger, it is difficult to relax. The feeling of peace is enhanced by soft, delicate colors: white, light blue and light green.
Plants and flowers in the room will create a calm, supportive environment.

It is easier to fall asleep when the body does not overheat. Keep the temperature in the bedroom around 19 degrees or slightly less. If it gets cold, you can always cover yourself with a blanket. And take a warm bath or Jacuzzi in the evening (deeply relaxing muscles), as the body temperature decreases rapidly after such water treatments.
If you are overheated, then drink mineral water with calcium salts.
Sometimes it's impossible to fall asleep from the cold. It increases feelings of fear and anxiety, which is why HSPs prefer warm weather, heat has a calming effect on the nervous system. Sometimes cold weather makes you feel uncomfortable, and in cold climates, it is very important to keep warm in winter.

Create silence in the room. Noise is one of the biggest problems for HSPs, as well as moving to another room or house. An effective way to hide from noise is to use earplugs. The noise reduction index for wax earplugs is 22 decibels, while for foam earplugs it is less than 29 decibels.
The anti-noise headphones used by construction workers are very effective. They reduce noise by about 22 decibels. Try to make custom earplugs, and they are exactly for your ear canal to make you feel comfortable.
If you want to completely tune out the noise, try putting headphones on earplugs.
Sensitivity to light can also interfere with sleep and heavy curtains will get rid of the glare of street lights or the moon, do not use bright lighting before going to bed.
However, in the morning, indoor lighting or sunlight, on the contrary, are useful. Light stops the production of melatonin, a hormone that promotes quality sleep at night, and causes a cheerful feeling in the morning.
The bed should be comfortable so that it does not appear
Meal. A light dinner should be completed by 19:00. It takes two to three hours to digest food, and eating late can cause insomnia. It is better to eat spicy dishes at lunch rather than in the evening. Taking complex carbohydrates before bedtime, contained in whole grain bread or rye crackers, can raise the level of serotonin, a brain neurotransmitter that provokes sleep. Eating most types of protein prevents sleep by blocking the synthesis of serotonin
Eating nutritious, warm, and liquid foods is good for sleep. A raw food diet causes sleep problems. A glass of warm milk with nutmeg an hour before going to bed will help you fall asleep. Nutmeg has natural soothing properties, and a cup of herbal tea (such as chamomile) in the evening will relax the nervous system.

How to get rid of sleep problems
• Analyze your lifestyle to understand where you can reduce stress.
• Exclude any medical causes of insomnia, such as taking medications, sleep apnea, etc.
• Bedtime meditation, deep abdominal breathing exercises, progressive relaxation, or relaxing music for 20 minutes.
• Try to go to bed around 22:00.
• Do not look at the clock after 20:00 or 21:00.
• In the evening, it is not recommended to watch TV shows that excite the nervous system or engage in intense discussions. Spend time reading inspiring books, writing, meditating, or engaging in quiet conversations.
Take quiet nature walks during the day.
• Do 30 minutes of aerobic exercise at least three times a week. Do not exercise in the evening.
• Finish a light dinner around 7 p.m. and don't eat spicy food in the evening. Taking some starchy foods before bedtime, such as sprouted grain bread, can enhance the production of soothing neurotransmitters.
• An hour before bedtime, drink a cup of soothing herbal tea, such as chamomile, or some warm milk with nutmeg.
• Take a bath with a few drops of lavender essential oil or apply skin softening oil to your body or forehead before going to bed.

• From time to time, take soothing herbs, such as passionflower or hop, an hour before bedtime.
• Make sure your bedroom is quiet, dark, and cool. Create a safe and supportive environment.
Stick to a certain routine: go to bed every day and get up at the same time.
• Develop a positive attitude towards sleep. Rephrase the negative internal dialogue about sleep into positive statements.
• Sometimes traveling causes sleep problems, so don't forget to take sleeping pills with you.
Goodnight!

Relationships. HSPs and non-HSPs – it is necessary to find a compromise, as well as to find creative solutions, to learn to accept their differences instead of blaming each other for different temperaments.
Therefore, open your hypersensitive heart to solve problems in relationships with people and turn the destructive feeling of anger into love.
And just look at a person from the perspective of his higher self.
Conflict Resolution for HSPs

1. Choose a certain time and discuss accumulated problems with your partner once a week when you are both calm and in no hurry, for example, on a day off. During the week, write down everything that causes dissatisfaction in the partner's behavior. By fixing your feelings, you do not suppress emotions and at the same time do not aggravate the conflict in daily verbal battles.
2. At the beginning of the conversation, tell your partner about what you value in him. Both participants should speak softly, as HSPs react painfully to loud noises. During a meditation session, tell your partner how you feel, instead of listing what they're wrong about because they're not doing things the way you are or because they have a different temperament. Try to look at the situation through his eyes and be prepared to compromise. If you still can't solve the problem, then it may be worth contacting a family psychologist.

An apology for the one percent. Accept responsibility for your part of the blame in this quarrel, even if you believe that your contribution to the conflict is no more than 1%, and just apologize. Even by stepping on your pride, if you didn't hear an apology in return, you ensured a calm state of mind, as you managed to open your heart, reject accusations against another person and take responsibility for your actions.

Silence is gold, and talking can make this precious metal fade. Silence. And reduce the amount of time spent on empty conversations. Staying in silence with a group of people can be helpful. Practicing silence in large groups helps you feel more at peace.

And take less part in discussions, and this will provide security during meetings with relatives. At first, silence in the company of people may seem strange, but once you get used to enjoying the quiet, you'll want to extend this practice to other areas of your life.

Self-confidence training for HSPs. Set boundaries and express your opinion. People don't always realize that their behavior irritates you. If you silently wait for the person sitting behind you on the plane to stop tapping on the back of your seat, then eventually your patience will burst and the reaction will be violent.
It is useful to establish an emotional connection with a person before asking them to change their behavior. In some situations, it's worth explaining that you have a very sensitive nervous system before asking someone to adjust their actions.
Fostering self-confidence with concentration on the heart. To organize a role-playing game with a psychotherapist on a problematic situation. Try guided visualization before defending your position.

When we defend our rights from a position of love and without judgment, the likelihood that we will change our lives for the better is very high.

Forgiveness: the key to inner peace. Forgiveness is the key to physical and mental health. How can you be happy and healthy if you are "stuck" in feelings of anger and guilt? By blaming someone, you become a victim yourself. And the victim cannot be mentally or physically healthy. This is how the cells of the body are destroyed when we feel resentment and resentment. By forgiving others, we free ourselves and receive the greatest gift: peace and joy. When the inner balance is disturbed, there will be a tendency to increase mental pain, which will lead to an aggravation of disharmony in the relationship. Emotional pain does not exist at the same time as a feeling of joy, so the more often we can forgive, the better our interpersonal relationships will become.

Correction of low self-esteem. Minimize the number of quarrelsome and insensitive people in your environment. And to do this, you will need to increase your self-esteem and repeat the affirmation "I love and approve of myself the way I am" 500 times a day, then you will be able to put your interpersonal relationships in order. Dissatisfaction with yourself is based on the belief that you are not good enough. Therefore, a person, giving himself a positive attitude that he is good the way he is, increases self-esteem.

Analyze your thoughts. Byron Katy, author of Loving What Is (2002), has developed a method of introspection to form harmonious relationships. When making judgments about other people, ask yourself 4 questions: "Is this true?", "Can I know for sure that this is the truth?", "How will I react if I believe a negative statement about someone that may not be true?", "How will I should I treat a person if I give up my subjective opinion of him?" The last step is to turn your statement into the opposite, replacing the person you feel resentment and anger towards with yourself. For example, replace the thought "My husband should understand me better" with the opposite: "I should understand my husband better."

This technique will help you understand that it's all about projection, a psychological phenomenon that involves attributing one's own positive and negative qualities to other people. Therefore, if you love yourself, then you are supportive of the whole world, and if you hate yourself, then the whole world too. When you perceive yourself positively, your relationships with people improve, and with low self-esteem, there will be more tension in interpersonal contacts.

Understanding that when someone judges you for being sensitive doesn't really have anything to do with you will help boost your self-esteem. Other people's opinion of you is just a projection of their judgments. Similarly, when someone makes you sad, it's usually related to your worldview and much less to the behavior of another person.

Although due to the sensitivity of the nervous system, you may overreact to offensive remarks, it is the mind that makes you constantly upset. If you see potential problems everywhere, you look like a man who is fighting with his own shadow in a dark room. But when you turn on the light, you'll realize that there's no one else in the room. You've been fighting with yourself

Watch your thoughts. Identifying yourself with your thoughts can make you endlessly worry about problems in relationships with people. But if, instead of an immediate reaction, you can look at your thoughts and emotions from the outside, your relationship will become more harmonious. When you go crazy because you've been offended, take it easy and observe this thought. Pay attention to how your ego continues to judge others, which leads to mental pain, strife and negatively affects both you and your opponent. When you stop being an active participant in the conflict going on in your head, ask yourself what your next thought will be. And when it arises, find out what the next one will be. As you observe the thoughts passing through your head without

getting involved in them, you will begin to realize that you are standing above your negative judgments.

By following your current thoughts, you can get rid of regrets about the past and worries about the future. The ego thrives on the basis of conflicts that it needs to survive. Mental pain needs to be nourished in order to continue to grow, and negative thoughts are a suitable breeding ground that exacerbates it. However, if you consciously observe the negative thoughts that arise at the moment, they lose their power. You stop feeding your mind with energy by identifying yourself with a certain thought. Negative thoughts cannot grow if you focus on the current moment and the mental pain disappears.

Active listening reduces pain. When you actively listen to another person, the conflict usually comes to naught. Just reflect the feeling of satisfaction with the words of the interlocutor from the loving center of your heart. Try to understand the needs behind the words in order to figure out exactly what the other person wants, because in fact, everyone wants to be heard. It is useful to ask the other person to listen more attentively to you: this will help you feel that you are understood.

Self-focus can generate negative emotions, culminating in frustration in interpersonal relationships. Selfish negative emotions provoke the release of stress hormones. However, if you are really interested in listening to the other person, your brain will produce endorphins, creating inner peace. That is, the more often you listen attentively to other people, the better your relationship, emotional and physical condition.

Smile, and the world will smile back. The healing power of humor. Laughter is the best medicine. The enzyme d-lysozyme is released when you laugh so hard that tears flow from your eyes, it strengthens the immune and digestive systems.
A sense of humor is not just the ability to tell jokes, but also an openness to a sense of peace and joy. Usually, an undeveloped sense of humor is associated with an inflexible perception of the world.

When we frown, we use 75 muscles, and when we smile, we use only 15, so returning to the child's ability to rejoice will not require much effort from you. Laughter is a wonderful medicine that allows you to look at the problem from a different angle.
Heal the world, heal yourself. The advantages of HSPs are the ability to empathize with human suffering. With your compassionate heart, step over interpersonal conflicts, for example: cook a meal for an elderly neighbor, work. Think about what noble deeds you can do today.

By doing good deeds, you not only cheer up other people, but also step over your negative, selfish emotions. The law of karma says that whatever energy you give to the world around you, it will come back to you. When you get stuck on interpersonal issues because of your sensitivity, you may get depressed. But by doing good, helping others, you promote the production of endorphins in the body, which literally make you happy. When helping a stranger, keep in mind: perhaps this is a future friend with whom life has finally brought you together.
You HSPs may sometimes have to overcome your innate desire to avoid irritants in order to help those in need. It is almost impossible to reflect for a long time on the fact that someone has offended you if you are focused on helping other people.

Make a relationship spiritual. Create a spiritual connection with other people. Instead of wasting valuable time arguing about the difference in your sensitivity levels, think about what new activities you could do to make everyone feel better. Arrange a camping trip with a partner, relatives or friends. Organize joint meditation, prayer, reading fascinating books or watching

positive movies. When you and your loved ones engage in inspiring work, your spiritual bond grows stronger, and it will be easier for you to overcome small problems related to the difference in temperament.

Our souls have temporarily taken over human bodies in order to learn certain lessons. When you communicate with another person on a spiritual rather than a personal level, your relationship improves. When you awaken divine qualities in other people by spreading kindness around you, this flower will open up in all relationships with others. It is important to empathize with less sensitive people.
Xenophobia (fear of something alien or different) can cause internal conflicts in our soul.
A spiritual connection with pets gives a healing effect that animals have on people, reduce depression, because they give unconditional love. A loyal, affectionate animal is what the most sensitive people need as an antidote to the stress they experience living in a competitive world of non-HSPs.

Creating a harmonious relationship
1. Spend some time in silence every day, being in the company of a partner, relatives and friends.
2. Both parties to the relationship can agree to discuss conflicts no more than once a week. During the week, write down all your complaints about the other person, but refrain from any conflict until a pre-scheduled day.
3. The interlocutors agree to take a five-second pause before responding to each other's remarks during an argument.
4. Take responsibility for your behavior. Instead of blaming others, acknowledge your contribution to the quarrel, even if it is only 1%.
5. Analyze your negative thoughts about other people to see if they are justified. Perhaps your mind is making up these stories to confirm your already established beliefs, which eventually leads to tension in the relationship.
6. Practice staying "here and now."
7. When you are upset by someone you know well, try to focus on your heart, imagining a positive experience with this person until you get rid of negative emotions.
8. Use the active listening method.
9. Practice forgiving others and yourself.
10. Watch out for negative thoughts about other people. Just ask yourself, in the process of observing the appearance and disappearance of thoughts, what the next one will be.
11. Treat everything with humor. Smile more often.
12. Instead of silently fuming, learn to defend your rights in a friendly way.
13. Plan a positive time with friends and family. Spend time in nature, meditate, and enjoy working together.
14. Use your capacity for compassion to help your family, friends, and community.
15. Realize your oneness with all living things, especially animals and nature, and with the divine principle.

Create a comfortable work environment
• Try to develop a positive attitude towards your work by establishing friendly relationships with colleagues, helping other people, and showing professional enthusiasm.
• Listen to soothing music, maintain good air circulation and a comfortable indoor temperature.
• Look at the scenery. Bring flowers and plants to work.
• Have juice and herbal tea on hand, healthy food to snack on, and uplifting magazines for yourself, clients, or colleagues.
• Provide yourself with a comfortable chair. If you sit all day at work, then periodically stretch or take short breaks for walking.

• Perform slow abdominal breathing exercises throughout the day and take short breaks for meditation.
If you are calm, then your colleagues will be more relaxed, and this contributes to harmony in interpersonal relationships.
• Find out about the possibility of making changes to your work schedule: a later start of the working day, work from home, or a shortened day.
• Create a daily work plan so that the day passes without stress.
• Use the recommendations given in this chapter when dealing with colleagues with complex personalities.

If your job involves significant stress that cannot be reduced, analyze the situation to understand why you are staying in a stressful environment.
Caring for the soul of a hypersensitive person. .The more you cultivate a sense of spirituality, the easier it is to cope with overexertion during the day. Some people refuse to follow the path of spirituality because of previous negative experiences related to religion. But you can associate spirituality with unconditional love, the beauty of nature, or higher powers, or focus on a specific religious figure — Jesus Christ, Buddha, Muhammad, Krishna, or a prophet, such as Abraham or Moses. And there is something supernatural in life, think about the vastness and order of the universe

Understanding creates inner peace. When you understand human nature, you will become calmer. Almost no one loves others more than themselves, and the motivation of the vast majority of people is based on their own interests.
When the belief that others should behave in a certain way disappears, it becomes easier to feel inner harmony instead of overreacting to people's moods and constantly changing circumstances.
Some people really spread unconditional love around them, for example, sellers, when they want their goods to be purchased. Would this person be just as kind if they knew in advance that you don't intend to buy anything?

Similarly, having understood the essence of human nature, which is based on selfish interests, a sensitive person will no longer be so disappointed when he realizes that some selfish people are simply unable to show empathy.
Our temporary sensitive nervous system. Hypersensitive people attach excessive importance to a little discomfort and forget that the short journey of our soul in this incarnation will end quickly, it is easier to give up the delusion that we are just our sensitive body.

Many people believe that this ephemeral world is quite real, but in fact it is only a kind of illusion, since nothing real (eternal) can be destroyed. But although family, home, and bank account will disappear when we leave our bodies, the love we have shared with others and spiritual harmony will exist forever.
Isolation and patience. It is difficult for sensitive people to ignore what is happening in conditions of stimuli, the more you train your patience, the less minor inconveniences will get on your nerves.

Realizing that we are eternally living souls, rather than temporarily existing hypersensitive people, makes it easier for us to open our hearts and experience more joy.
Overcome temporary problems by developing spiritually through meditation, prayer, reading spiritual books, and spending time in a peaceful environment in the bosom of nature. The more you selflessly help others, the less you will focus on your own problems. By serving humanity, you will feel spiritual growth.
The feeling of gratitude expands our soul. Write down everything you're grateful for before you go to bed. After focusing on the positive aspects, go to sleep in a good mood. This exercise, performed throughout the day, will accelerate spiritual growth.

Show a good attitude towards others. HSPs focus on minor inconveniences that other people cause them. The more you focus on the positive traits of others, the happier you will be. Use your empathy to forgive everyone and open your heart by doing things motivated by love and kindness. Whenever I complain about someone's behavior, I feel my energy gradually deplete. Don't say anything bad about anyone. And point out one positive quality of each other and then: "Aren't people beautiful?!"
Having the ability to endlessly empathize, turn hatred into love, if you look deeper and discover the positive qualities present even in the most insensitive person.

The innocence of a child. For spiritual growth, you need to be as innocent as children. As adults, we focus only on the mind, as our ego judges everything and everyone. The ego can prevent the manifestation of innate childish innocence. By trying to feed our ego by constantly seeking approval, we lose our openness to the divine principle. Become nobody, and then you will become everything.

A metaphysical perspective. As acupuncture proves, there are points in our body that need to be opened in order not to block energy. Studies have shown that there are seven energy centers in the human body. HSPs usually have their upper energy centers open, while their lower ones may be closed. When HSPs live solely at the expense of the three upper energy centers: the crown (the top of the head), the third eye (the point between the eyebrows) and the throat area, they constantly absorb the energy of other people. When the lower energy centers located in the abdominal area, the base of the spine, and the area slightly below the base of the spine are closed, HSPs may be "not grounded." By opening the lower energy centers, HSPs become more focused, allowing the flow of energy to freely circulate through the body. This balanced flow of energy will help you better deal with irritants.
From the point of view of Eastern teachings, any suffering that people experience in life is due to negative karma acquired in this life or in previous incarnations. And all positive events occur due to the merits of a person in this or a previous life. Perceiving the situation from this point of view, you may decide that We can reduce the influence of karma in difficult times by doing good deeds, praying or meditating. Although sometimes we despair because of sensitivity, which creates a lot of problems for us, in fact, what we consider to be hindrances can turn out to be an opportunity for spiritual improvement.
Meditation, nature, and your spirituality. Many spiritual mentors taught: The meaning of human birth is to fill the soul with endless love and light. Through meditation and being in the bosom of nature, HSPs can easily feel the radiant divine energy passing through us. Inner contemplation and reflection can develop innate spiritual abilities and calm the nervous system. Since as an HSL you are able to feel joy and appreciate beauty more strongly, you will immediately calm down by being in the midst of nature and observing its harmony. The awareness of the selflessness of nature also inspires. For example, an apple tree gives its fruits to others, leaving nothing for itself, even when it is cut down.

There is no death. The thought of death scares us. Since many people try to control the effects of disturbing stimuli throughout their lives, we are afraid of what will happen to us when we leave our sensitive bodies.
The fear of death can also be caused by the thought that death will destroy everything you have, what you are attached to, and what you hold on to. This "clinging" causes pain. From the perspective of the doctrine of reincarnation, old age and the approach of death are a win—win situation for a believer, since you will either get closer to finding a new healthy body in a new birth, or you will forever lose yourself in the love of God.
Most people spend a lot of time and money trying to look attractive through dieting, buying fashionable clothes, visiting beauty salons and expensive fitness clubs. This is the absurdity of

trying to fuel one's ego by decorating a body that in just a few decades will be buried or become a handful of ashes.

Choose one!!!!!! What is right for you
1. Acupuncture (acupuncture, reflexology
2. Aromatherapy
3. Biofeedback
4. Bodywork (bodywork)The Feldenkrais method is a system of movements, floor exercises, and bodywork aimed at "retraining" the central nervous system and forming new neural pathways to areas of body blocks or damage to help people move more freely by learning smooth and easy movements.
5. The Trager method is a very gentle way of working with the body, which uses careful rocking and stretching movements to achieve deep relaxation. The therapist gently relaxes pinched muscles and numb joints.
6. Rolfing is an invasive form of bodywork, the purpose of which is to affect the musculoskeletal system by manipulating tension zones deep in the tissues. It can release suppressed emotions and relieve the muscle tension that has become habitual. For those who can tolerate deep work with the body, to relieve emotional and muscular tension.
7. Chiropractic adjust the position of the spine and joints, which can affect the state of the nervous system. This improves the condition of the back, and helps to solve other health problems. Such manipulations may seem too annoying and aggressive. There are also mild forms of chiropractic adjustments. Network spinal analysis is a form of neurological practice that usually involves a deeper level of therapy to help distract from physical, emotional, and psychological trauma in order to help develop new strategies to deal more effectively with everyday stress. The technique of directed non-forceful action provides for a gentle, precise impact on muscles, tendons, vertebrae and intervertebral discs with a focus on the "wisdom of the body". This technique is effective for restoring the normal functioning of joints and returning to an optimal state of the body as a whole.
8. Psychological counseling if you are worried about unacceptable emotions (depression, anxiety, anger) that interfere with leading a normal life, or you cannot implement the recommendations received at the psychological counseling. When choosing a psychologist or psychotherapist, it is important to talk with several candidates beforehand to determine which one is more suitable (for example, a behaviorist, a Jungian, etc.) and whether he understands HSV. You don't buy the first car you see. You entrust your mental health to the specialist you choose. The consequences of this will have an impact on your life for at least a period comparable to the time you own a car. Therefore, not only respond to their questions, but formulate your own and listen carefully to the answers to understand whether this specialist has the necessary knowledge about your hypersensitivity and whether he understands it.
9. Doctors of holistic (alternative) medicine. Doctors of holistic (alternative) medicine, herbal medicine or Chinese medicine, understand supplements (such as vitamins, minerals and amino acids), nutrition, homeopathy and acupuncture. The advantages of consulting with such doctors are that they are aware of the side effects of taking herbs and supplements and are competent enough to prescribe the necessary diagnostic examinations.
10. Homeopathy uses highly diluted medicines made from natural substances that serve as catalysts for natural self-healing processes in the body. Most homeopaths are opposed to their patients using a number of other treatment methods, including allopathic medicines and herbal remedies, as they can negate the effect of a homeopathic remedy. Although homeopathy is usually safe, HSV must be used with caution.
11. Hypnotherapy.In the process of hypnotherapy, the patient is encouraged to enter a state of increased suggestibility, in which certain attitudes are introduced into his consciousness. They can help change behavior or beliefs, promote relaxation. Hypnotherapy is effective in treating stress, anxiety, fear, and depression, and increases the patient's resistance to negative stimuli.

12. Meditation.In the process of concentration meditation, attention is focused on the breath or the mantra (words). Mindful meditation involves only observing the state of mind without any reaction. There are many schools that teach both concentration and mindful meditation. But you need to use your intuition to choose an approach that works harmoniously with your hypersensitivity. There are too many methods of meditation. Integrated amrita meditation is a method of deep relaxation, especially if there are difficulties with concentration; transcendental meditation (TM) is a simple mental technique for 20 minutes twice a day, when it enters a deeper state of relaxation than during normal rest. One of the forms of mindful meditation is Buddhist meditation, the central point of which is conscious attention to breathing and posture, as well as to the thoughts that arise in the head. Tit Nath Khan offers retreats for practicing mindfulness meditation, which promote deep calming of the nervous system.
13. Naturopathy helps the healing process by applying various alternative medicine methods, including diet, herbal medicine, and lifestyle changes based on the patient's needs. Naturopaths act on the cause of a person's out of balance, not on its consequences (Goldberg, 1993). This gentle holistic approach to treatment is effective for most HSPs.
14. Sensory deprivation chamber (floating capsule)— this is a container made of cardboard or wood and plastic lining, measuring 2.1 × 2.1 × 2.1 meters. No light penetrates the capsule at all, and when a person's ears are immersed 25 centimeters into a saline solution, they do not hear any sounds. The camera allows you to achieve isolation from all stimuli, while a person, lying on his back, is completely immersed in a saline solution and is as if in the womb. Such an atmosphere, excluding irritants, is useful for HSV. However, some hypersensitive people experience fear.

Treatment regimen for myofascial syndromes.
1. Genetic analysis. Sports and nutrition. Vitamins, minerals, enzymes, amino acids.
2. Nutritionist. Analysis and ultrasound of the liver and somatic organs.
3. The spine and bones. CT and MRI scans
4. Psychologist. Habits. Blocks. Emotional intelligence.
5. Osteopath and kinesiologist. Types of osteopathy.
6. Self-help and correction. A. Chinese medicine (gouache, needles, qigong). Oriental practices (relaxing or reprogramming meditation, affirmation, yoga, pranoyama breathing). C. European approach - massage, sauna, massage chairs, hardware massages)
7. Medical symptomatic treatment.
8. Control of brain function. Sleep apnea.
9. The algorithm of transition to a new level. Self-help mechanisms.
10. Generic scenarios, programs of the genus, and the person himself.
11. Teeth and correction of the external world.

Patient Dob. 26.03.1986.
Chief complain: muscle spasm.
Date of examination: December, 2016.

Shift to the left.
Internal inclination premolars and molars.
Abfractions.
II class left side.
Posterior OP decreased.
I class right side OP steps.

Special Medical Analys Do you have or did you ever have an ness with regard to points 1-12?					
	yes	no		yes	no
1.Infections		X	7.Urogenitial problems		X
2.Cardo-vascular systems		X	8.Central nervous systems		X
3.Digestive systems		X	9.Psychological problems		X
4.Metabolc systems		X	10.Rheumatic disease		X
5.Allergies		X	11.Hormonal disease		X
6.Respratory systems		X	12.Special problems		X
Main concern	SPASM IN MANDBLE				

Movement	**Muscles**
Posture	1,2, 7, 12, 13, 14
Closing	3a, 3b, 4a, 4b, 5
Opening / Protraction	8, 9, 10
Retraction	3c, 8
Medio-/Laterotraction	6, 3a, 4a
Hyoid-Position	8, 9, 10, 11, 13
Functions	7, 8, 9,10, 11, 14

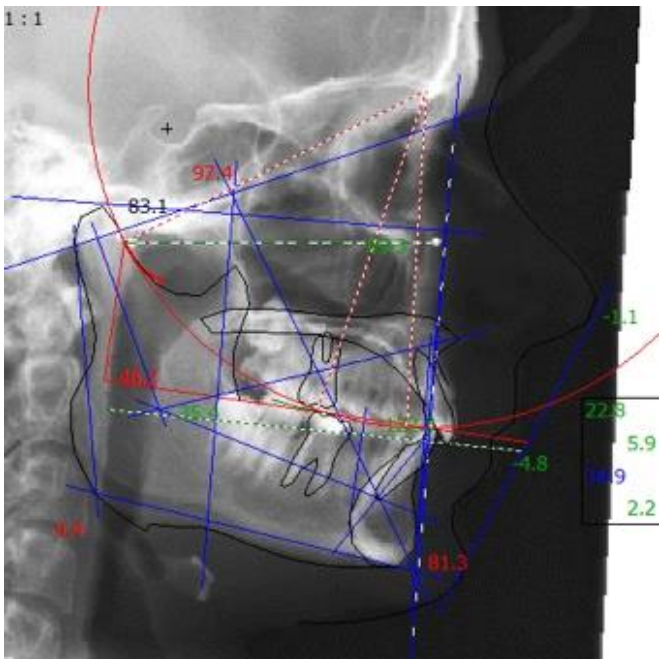
Closing,Mediotractor,Function, TMJ position

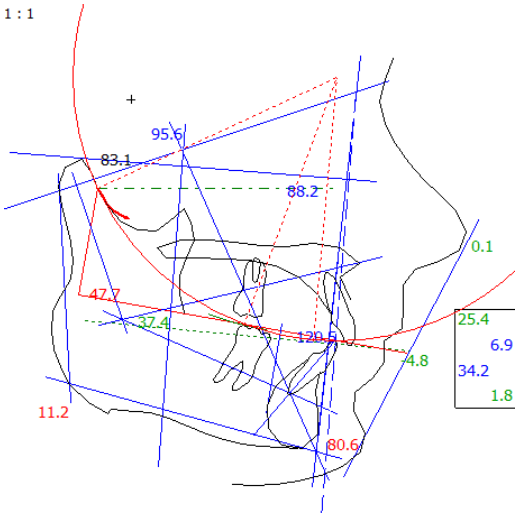
Dental History Analysis			
	Valuation	Yes	No
1.Do you have problems when you chew?		X	
2.Do you have problems when you are talking?	2	X	
3.Do you have problems in closing your teeth properly?	3	X	
4.Are any of your teeth especially sensitive?	2	X	
5.Do you have problems when you open your mouth very wide?			X
6.Do your jaw joints make noise and if so, on what side?	1	X	
7. Do you have pain in the area of your jaw joints?			X
8. Do you suffer from headaches?	1	X	
9.Do you have suffer from cramps or spams in your head, neck or throat?	3	X	
10.Do you have in general problems with your posture,	2	X	
Occlusal Index	2.00		
11.Have you ever had a serious accident?			X
12.Did you have one or more oral intubations?			X
13.Have you ever had orthodontic treatment or….			
14.Have you had a treatment with a splint?			

15.Are you grinding or pressing with your teeth?		X	
16.Do you think that treatment is necessary?		X	
17.Do you think that there is a serious disorder or illness?		X	
18.When was the last time you had dental treatment and what was done?			
How would you describe your psychic behaviour? ☐Happy ☐sad ☐calm ☐exoted ☐self-controlled ☐lack of self control			

Muscle diagnosis

	right		left	
	+	++	+	++
1.should and neck	X		X	
2.atlanto-occipital region				
3.a M. temporalis ant				
3.c M. temporalis med				
4.a M. temporalis post		X		X
4.b M. masseter (superficial)				
5. Tuber maxillae				
6. M. pterygoids medialis				
7. M. mylohyoideus				
8. M. digastricus				
9. suprahyoidale M.				
10. infrahyoidale M				
11. Larynx				
12. M.sterno-cliedo-mastodeus	X		X	
13.M. omohyoideus				
14. Tongue				
15.Comparative palpation of jaw joints a) lateral poles, statically b) lateral poles, in rotation c)retral joint space d)Lig.temporo-mandibulare				



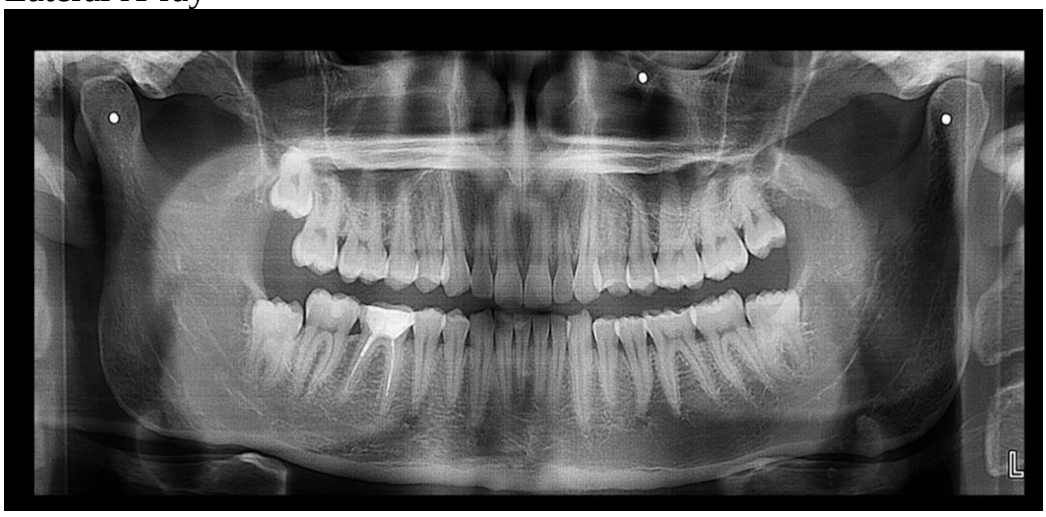


VTO increase VD from 34 degree to 37 degree +6 mm on incisal pin

Skeletal Measurement	Norm	Value	Trend
Facial Axis	90. 0 °	97.4	2b**
Facial Depth	91.5 °	89.3	
Mandibular Plance	21.5 °	9.4	3b**
Facial Taper	68.0 °	81.3	3b
Mandibular Arc	31.2 °	48.2	4b
Maxillary Position	65.0 °	64.4	
Convexity	-1.0 mm	-1.1	
Lower Facial Height (by R.Slavcek)	40.4 °	35.4	
Lower Facial Height to Point D	46.9 °	39.5	1-*
Dental Measurement	Norm	Value	Trend
Interincisal Angle	132.8 °	122.3	
Upper Incisor Protrusion	4.3mm	5.9	
Upper Incisor Inclination	23.1 °	22.8	
Upper Incisor Vertical	mm	3.3	
Upper Incisor Protrusion	1.2mm	2.2	
Upper Incisor Inclination	24.1 °	34.9	1+
Upper Molar Position	21.0mm		

Occlusal plane	Norm	Value	Trend
Occlusal plane-Axis Orbital Plane	-----	8.2	
Idealized Occlusal plane-Axis Orbital Plane	-----	6.8	
Distance Occlusal plane-Axis (DPO)	40.9mm	34.2	
Radus of Curve of Spee	-----		
Lip Embrasure	0.0mm		
Occlusal Plane XI Distance	-1.4mm	5.0	1+*
Functional Measurement (Lip Relation)	Norm	Value	Trend
Horizontal Condylar Inclination right	-----	56.0	
Horizontal Condylar Inclination left	-----	57.5	
Horizontal Condylar Inclination	-----	56.7	
Relative Condylar Inclination	-----	48.5	
Relative Condylar Inclination 6	-----	45.4	
Relative Condylar Inclination 7	------	41.7	
Relative Condylar Inclination 8	°		
Anterior Guidance	°		
Relative Anterior Guidance	°		
Esthetic Measurement (Lip Relation)	Norm	Value	Trend
Esthetic Plance	-2.9mm	-4.8	

Lateral X-ray



Problem list

Low mouth hygiene
Spasm in throat
Abfractions
Bruxing habits
Pain TMJ

Treatment objectives

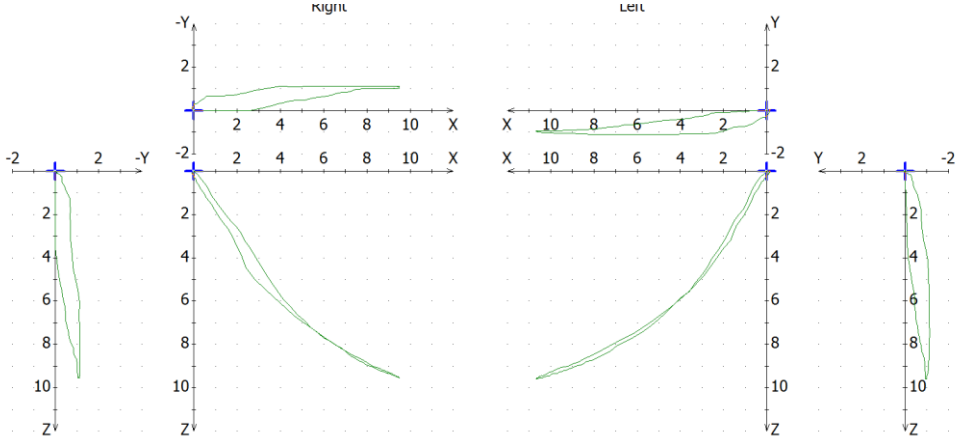
Splint – therapy
Osteopathic treatment
Create posterior support and anterior control and canine control
Determine VD

Treatment plan

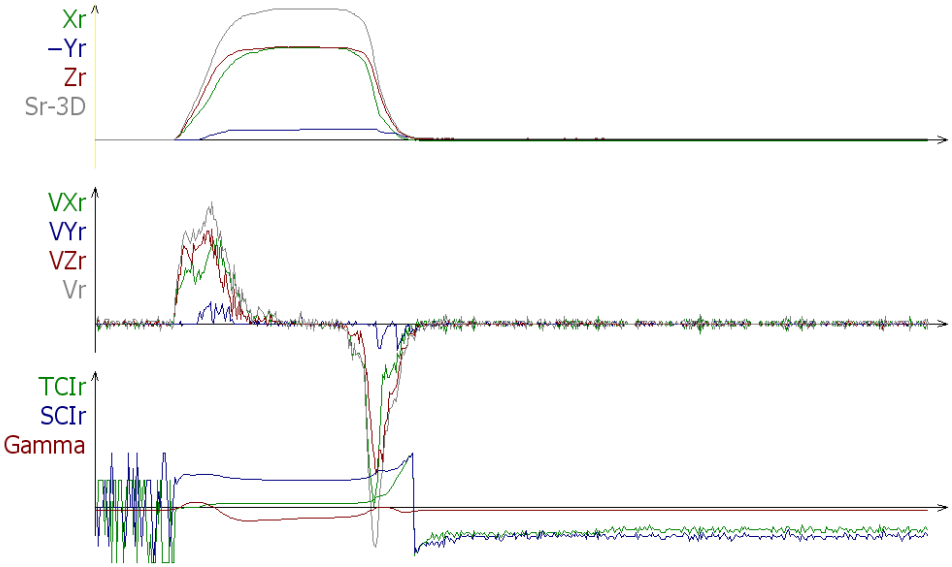
1. Functional analyses: clinical and instrumental.
2. Splint-therapy for determination of correct RP.
3. Wax-up.

Condilography, 2016.

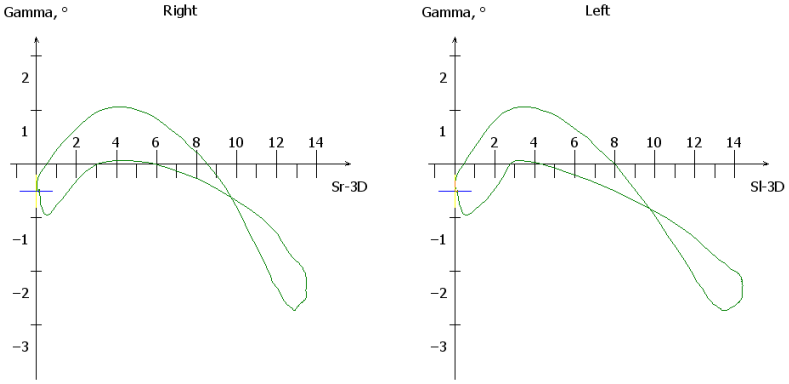
Protrusion – retrusion. Shift to the left on start of the movement, medially displaced disk or occlusal interference.



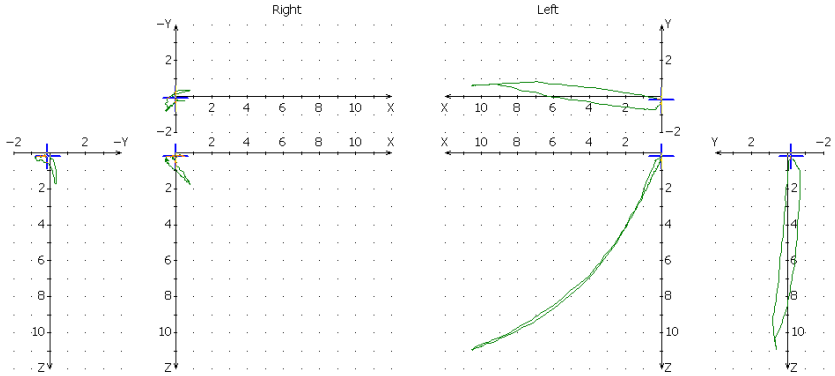
Muscles strongly activity - spasm



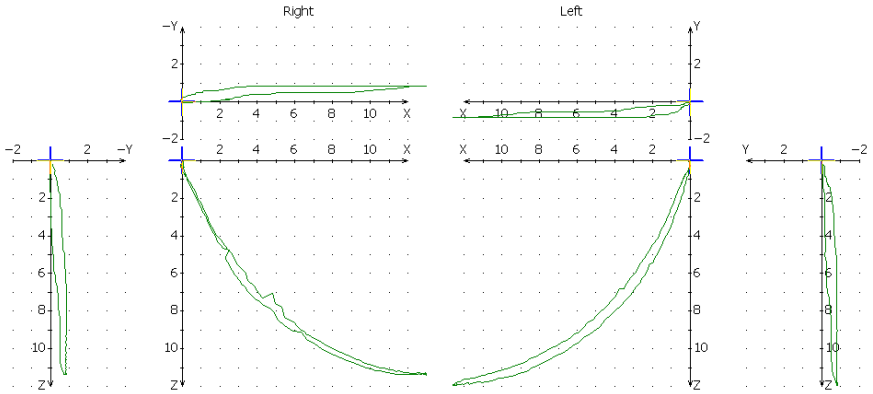
Gamma rotation



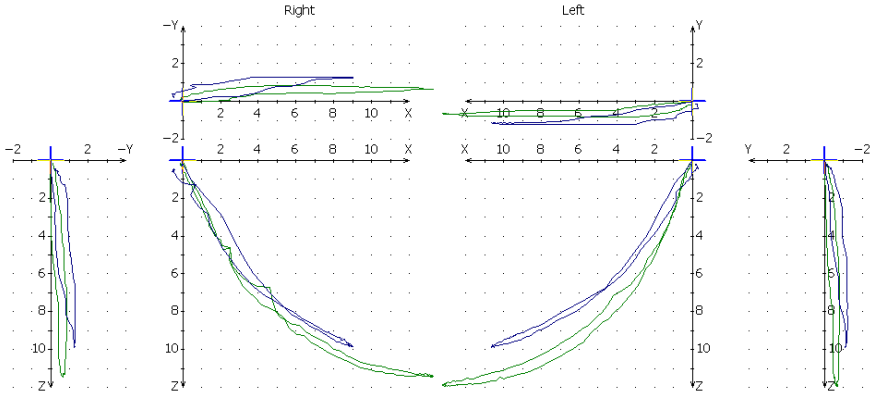
Mediotrusion left



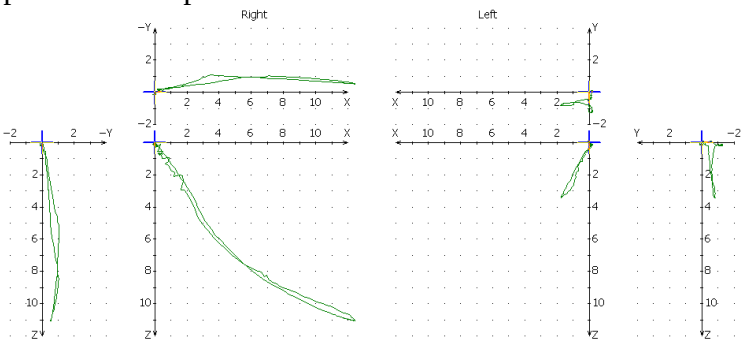
Mediotrusion right. Interference in left TMJ - avoidance pattern.



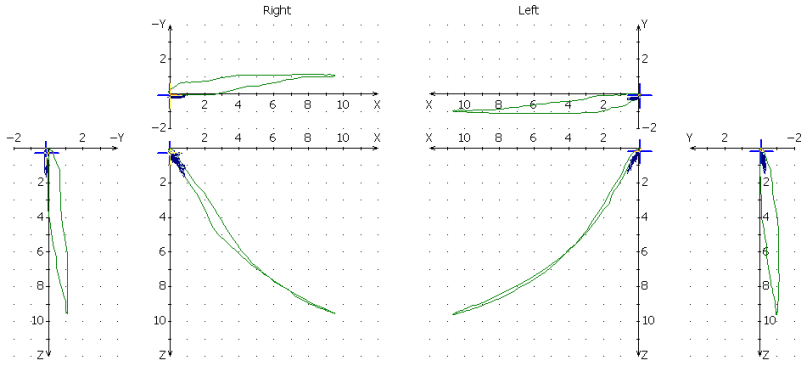
Open-close



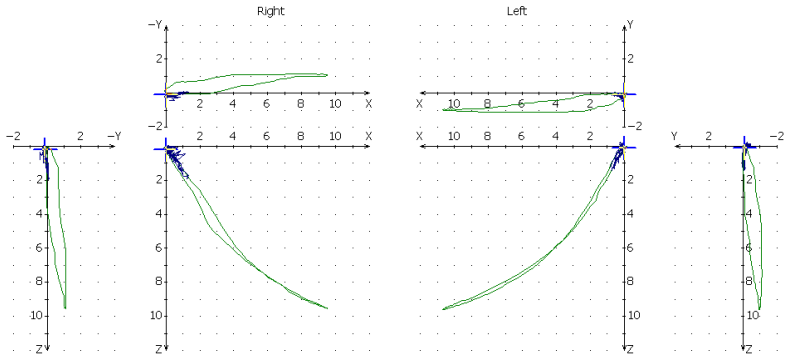
Overlay protrusion – open



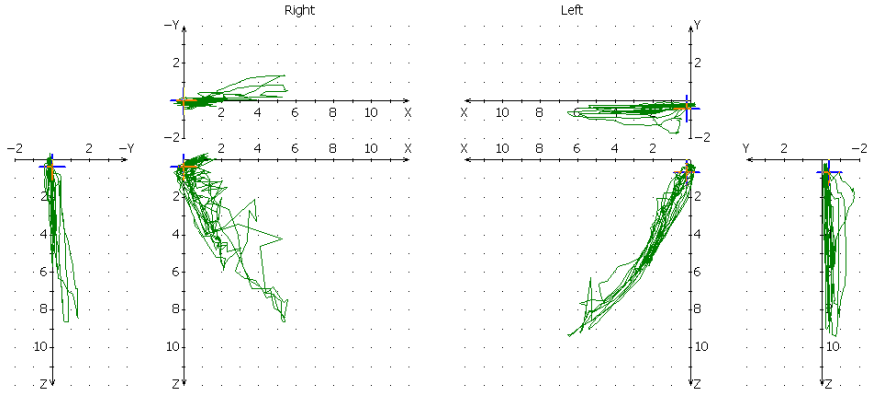
Speech. On closing- distractive. Protrusive only 1,5 mm



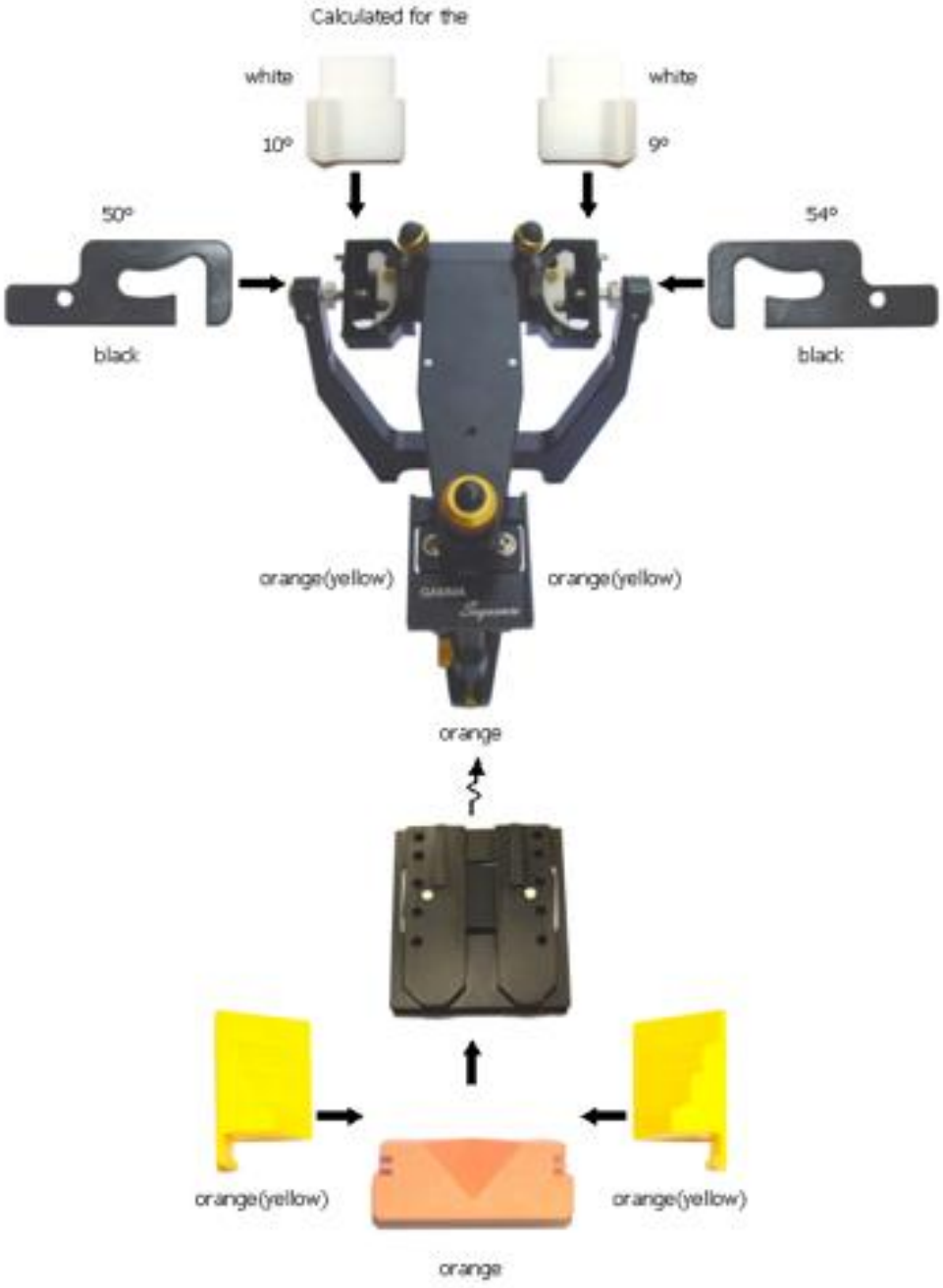
Brux



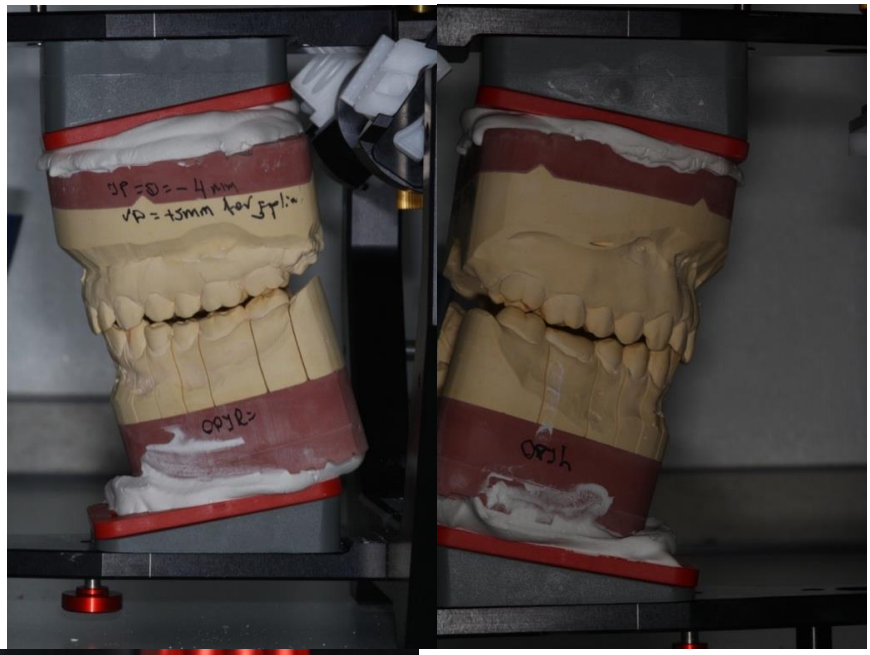
Mastication. Protrusive type of chewing. No transversal component

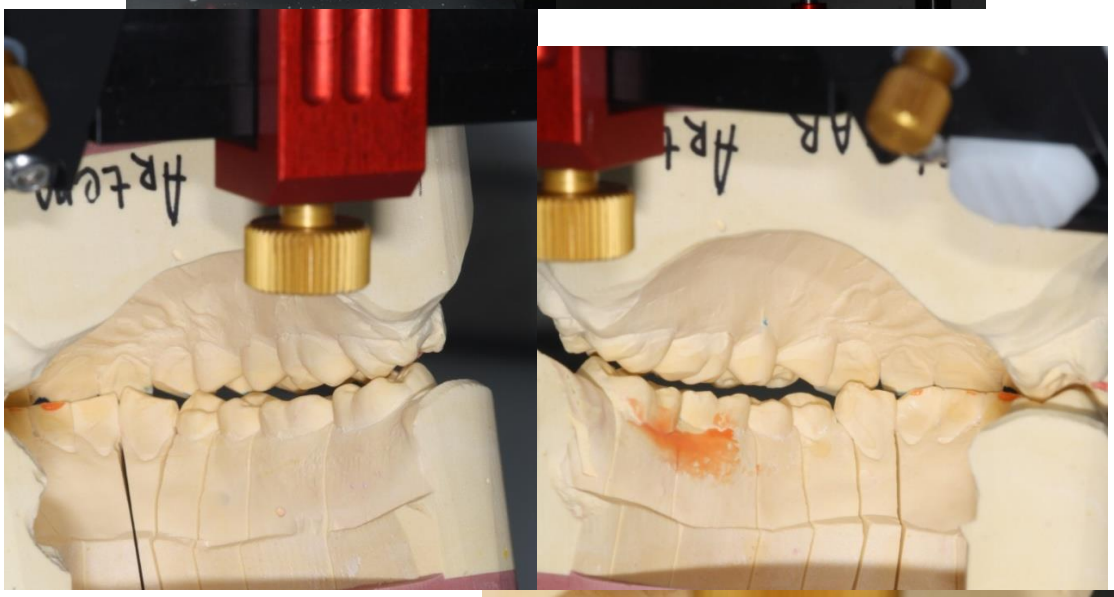


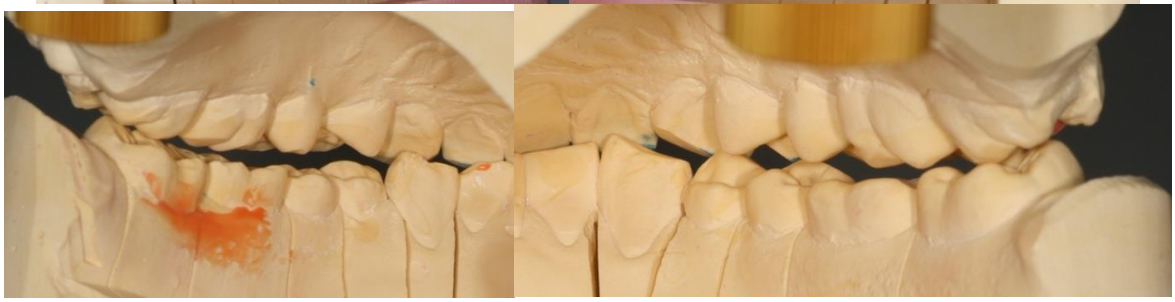
Articulator settings

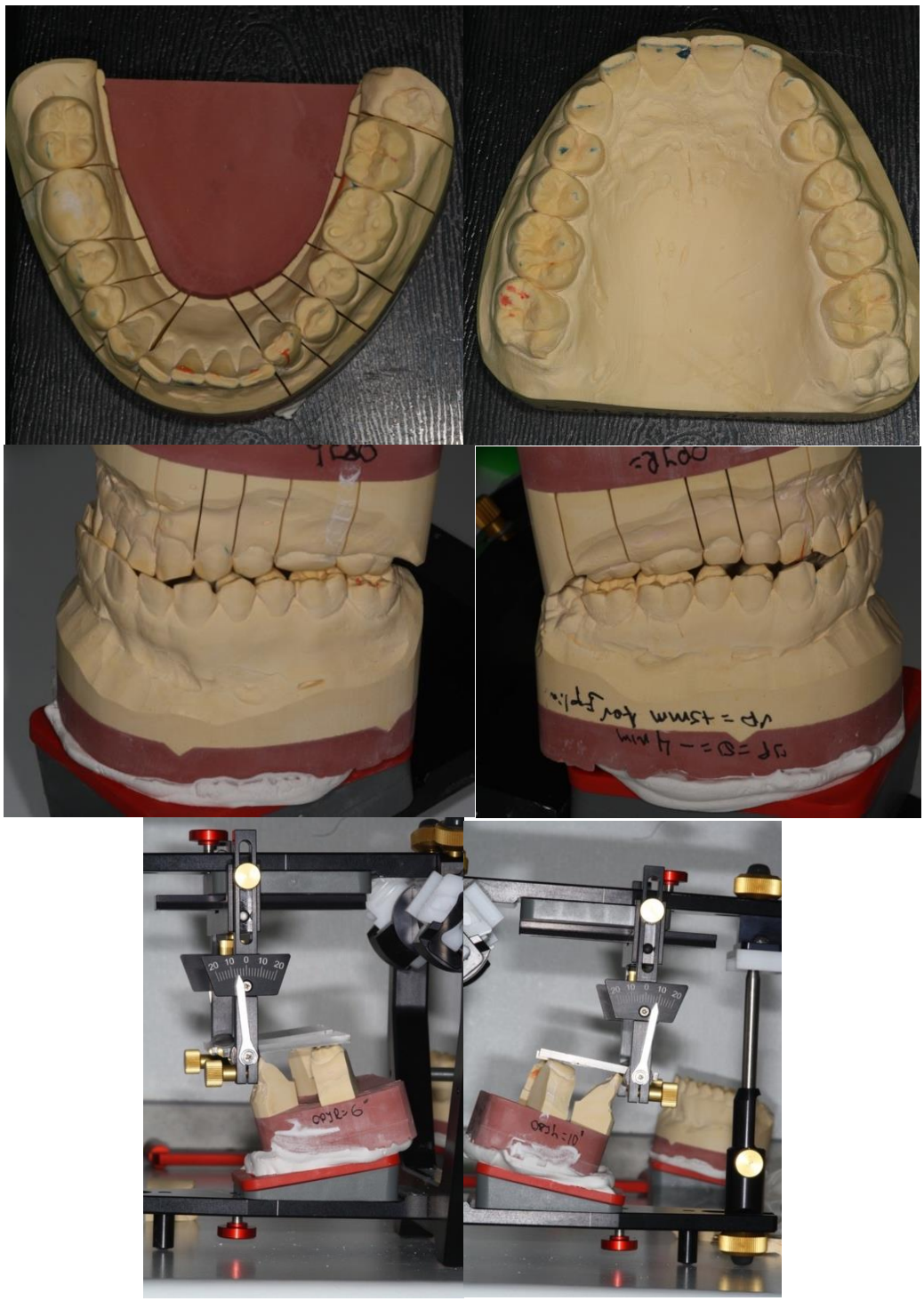


Reference position









OPI R = 6, OPI L= 10

Treatment plan

1. Splint therapy.
2.Hygiene.
3. Remounting the casts after splint – therapy.

Splint- therapy: Remounting the casts to IP = 0 and increase VD+5 mm. (both sets).
Cast without double pin – for cross mounting and splint fabrication.
Myopathic verticalization splint.
SCI r=SCI L = 52 degrees, black insert.

Bennett r=l= 10 degrees, white insert.
Date of examination 12.08.2024
Midline shifted to the left, myofascial pain
Abfractions
Bruxing

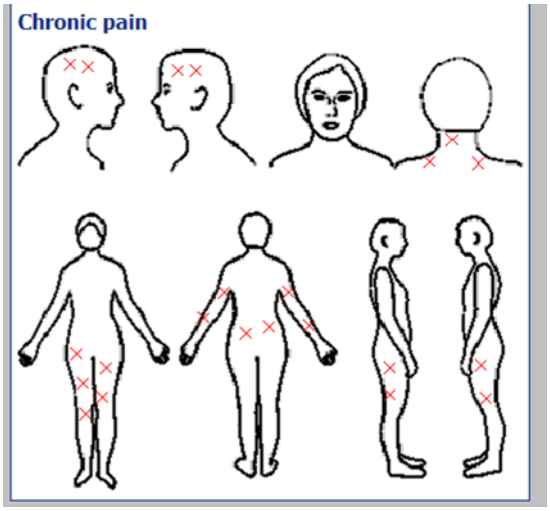
Intraoral pictures, August 2024

Occlusal view upper and lower jaw

Special Medical Analys Do you have or did you ever have an ness with regard to points 1-12?					
	yes	no		yes	no
1.Infections		X	7.Urogenitial problems		X
2.Cardo-vascular systems	X		8.Central nervous systems		X
3.Digestive systems		X	9.Psychological problems		X
4.Metabolc systems		X	10.Rheumatic disease		X
5.Allergies			11.Hormonal disease		X
6.Respiratory systems		X	12.Special problems		X
Main concern	SPASM IN MANDBLE				

Dental History Analysis			
	Valuation	Yes	No
1.Do you have problems when you chew?	2	X	
2.Do you have problems when you are talking?	2	X	
3.Do you have problems in closing your teeth properly?	2	X	
4.Are any of your teeth especially sensitive?	2	X	
5.Do you have problems when you open your mouth very wide?			X
6.Do your jaw joints make noise and if so, on what side?			X
7. Do you have pain in the area of your jaw joints?	2	X	
8. Do you suffer from headaches?	2	X	
9.Do you have suffered from cramps or spams in your head, neck or throat?	3	X	
10.Do you have in general problems with your posture,	3	X	
Occlusal Index	2.25		
11.Have you ever had a serious accident?			X
12.Did you have one or more oral intubations?			X
13.Have you ever had orthodontic treatment or….			X
14.Have you had a treatment with a splint?			X
15.Are you grinding or pressing with your teeth?		X	
16.Do you think that treatment is necessary?			
17.Do you think that there is a serious disorder or illness?		X	
18.When was the last time you had dental treatment and what was done?			
How would you describe your psychic behaviour? ☐Happy ☐sad ☐calm ☐exoted ☐self-controlled ☐lack of self control			

Muscle diagnosis				
	right		left	
	+	++	+	++
1.should and neck		X		X
2.atlanto-occipital region				
3.a M. temporalis ant				
3.c M. temporalis med				
4.a M. temporalis post				X
4.b M. masseter (superficial)		X		
5. Tuber maxillae			X	
6. M. pterygoideus medialis			X	
7. M. mylohyoideus			X	
8. M. digastricus		X		
9. suprahyoidale M.		X		
10. infrahyoidale M		X		
11. Larynx		X		
12. M.sterno-cliedo-mastodeus			x	X
13.M. omohyoideus				
14. Tongue				
15.Comparative palpation of jaw joints a) lateral poles, statically b) lateral poles, in rotation c) retral joint space d) Lig.temporo-mandibulare		 X X X X		 X X X X



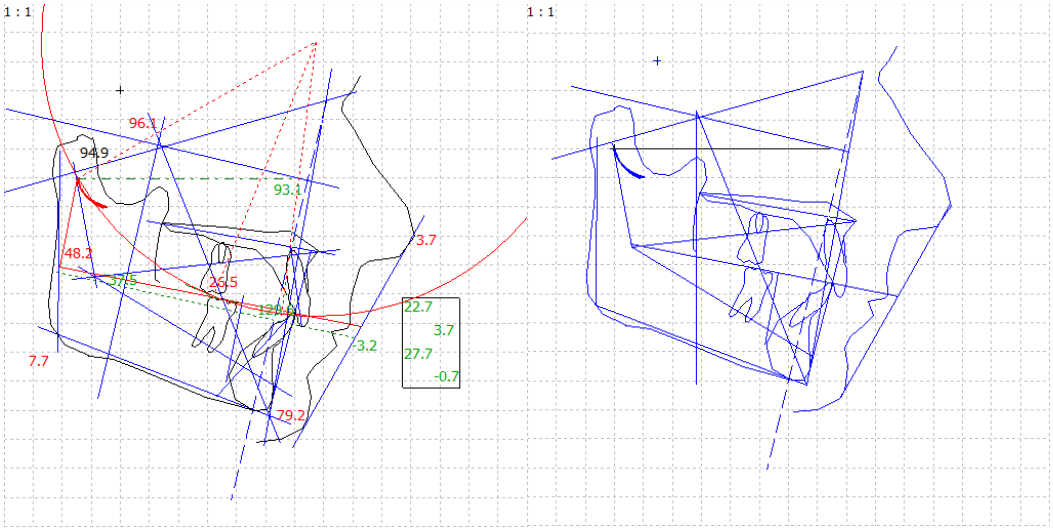
Muscle palpation

Posture. 1,2, 7, 12, 13, 14
Closing3a, 3b, 4a, 4b, 5
Opening / Protraction 8, 9,10
Retraction. 3c, 8
Medio-/Laterotraction6, 3a, 4a

Hyoid-Position8, 9, 10, 11, 13
Functions 7, 8, 9,10, 11, 14
TMJ15a, 15b, 15c, 15d

Lateral X-ray

OPG



Important
OPI R = 16degrees, OPI L = 16degrees, SCI R= 65degrees, SCI L= 65 degrees.

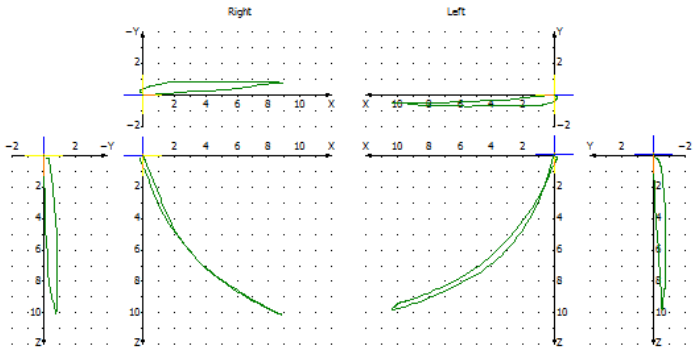
Anterior Guidance 70 degrees.
DOA R= 19degrees, DOA L= 19 degrees.

Maxilla position –strongly prognathic.

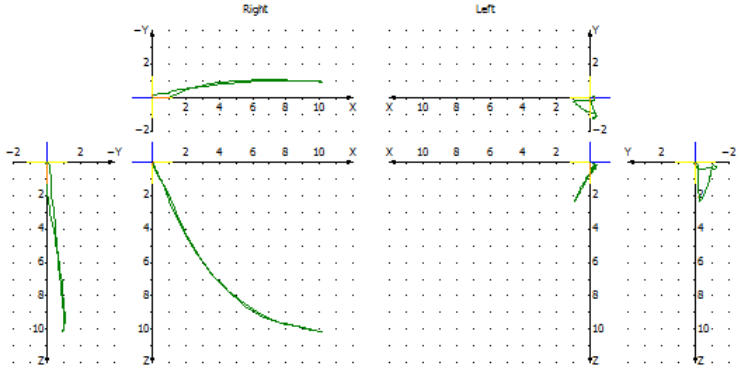
Mandible position – is prognathic with tendency to neutral, Skeletal class is II wish tends to I.

Skeletal Measurement	Norm	Value	Trend
Facial Axis	90. 0 °	96.0	2b**
Facial Depth	91.5 °	93.1	
Mandibular Plance	21.5 °	7.7	3b**
Facial Taper	68.0 °	79.1	3b
Mandibular Arc	31.2 °	48.2	4b
Maxillary Position	65.0 °	70.0	2+**
Convexity	-1.0 mm	3.6	2x
Lower Facial Height (by R.Slavcek)	42.3 °	37.5	
Lower Facial Height to Point D	50.3 °	39.5	1-*
Dental Measurement	Norm	Value	Trend
Interincisal Angle	132.8 °	129.6	
Upper Incisor Protrusion	4.3mm	3.6	
Upper Incisor Inclination	23.1 °	22.7	
Upper Incisor Vertical	mm	4.2	
Upper Incisor Protrusion	1.2mm	-0.6	
Upper Incisor Inclination	24.1 °	27.6	
Upper Molar Position	21.0mm	26.5	2+
Occlusal plane	Norm	Value	Trend
Occlusal plane-Axis Orbital Plane	-----	11.0	
Idealized Occlusal plane-Axis Orbital Plane	-----	13.3	
Distance Occlusal plane-Axis (DPO)	40.9mm	31.2	1-**
Radus of Curve of Spee	-----	94.9	
Lip Embrasure	0.0mm	4.2	1+*
Occlusal Plane XI Distance	-1.4mm	0.7	
Functional Measurement (Lip Relation)	Norm	Value	Trend
Horizontal Condylar Inclination right	-----	65.3	
Horizontal Condylar Inclination left	-----	65.6	
Horizontal Condylar Inclination	-----	65.4	
Relative Condylar Inclination	-----	54.4	
Relative Condylar Inclination 6	-----	53.6	
Relative Condylar Inclination 7	------	43.7	
Relative Condylar Inclination 8	°		
Anterior Guidance	°	71.0	
Relative Anterior Guidance	°	60	
Esthetic Measurement (Lip Relation)	Norm	Value	Trend
Esthetic Plance	-2.9mm	-3.2	

Protrusion/retrusion

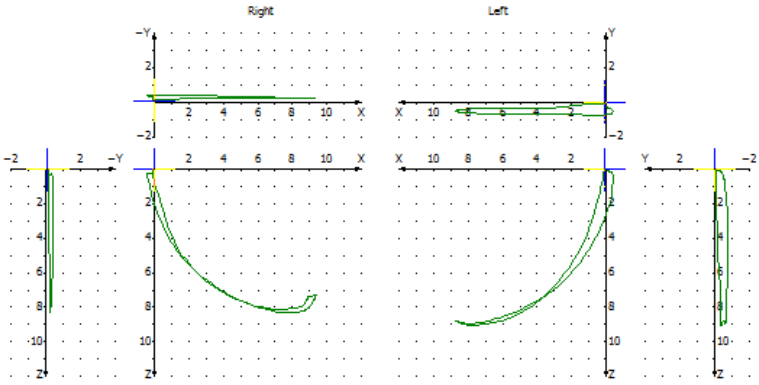


Mediotrusion (right)

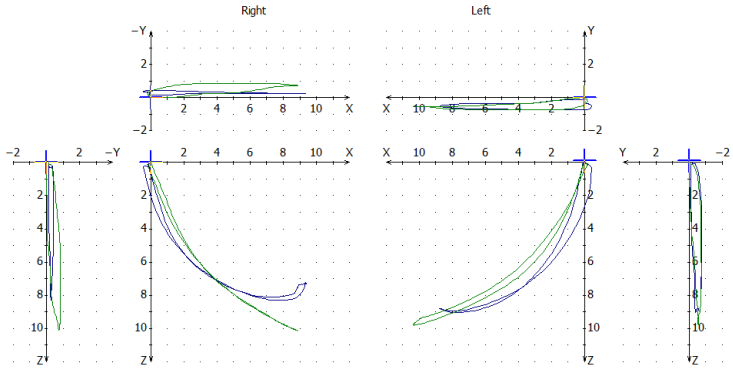


Mediotrusion (left)

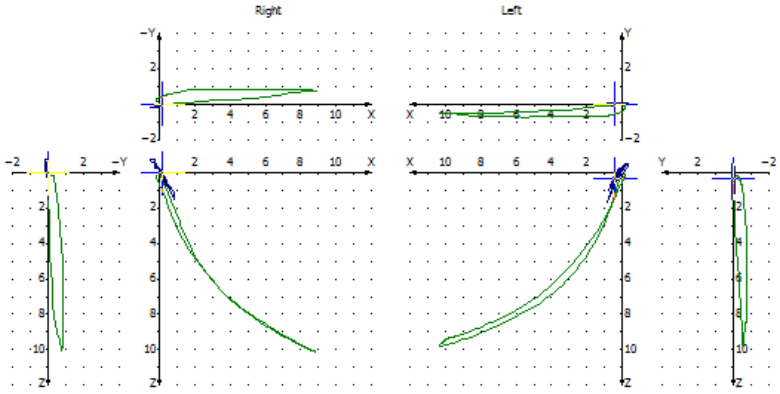
Open-close



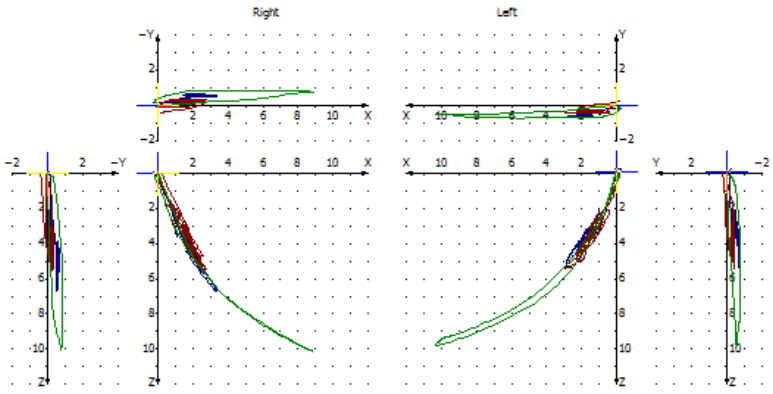
Protrusion – open



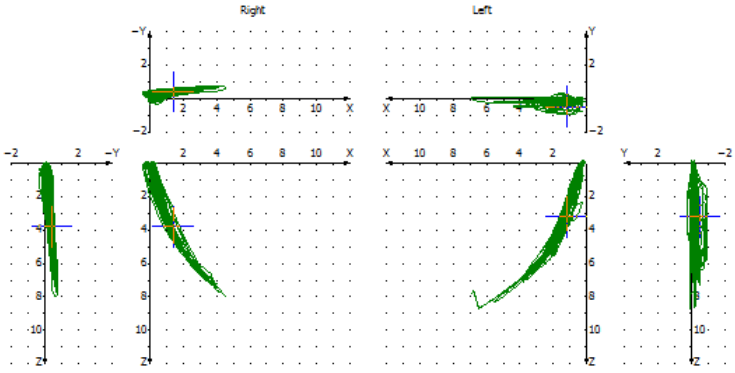
Bruxism



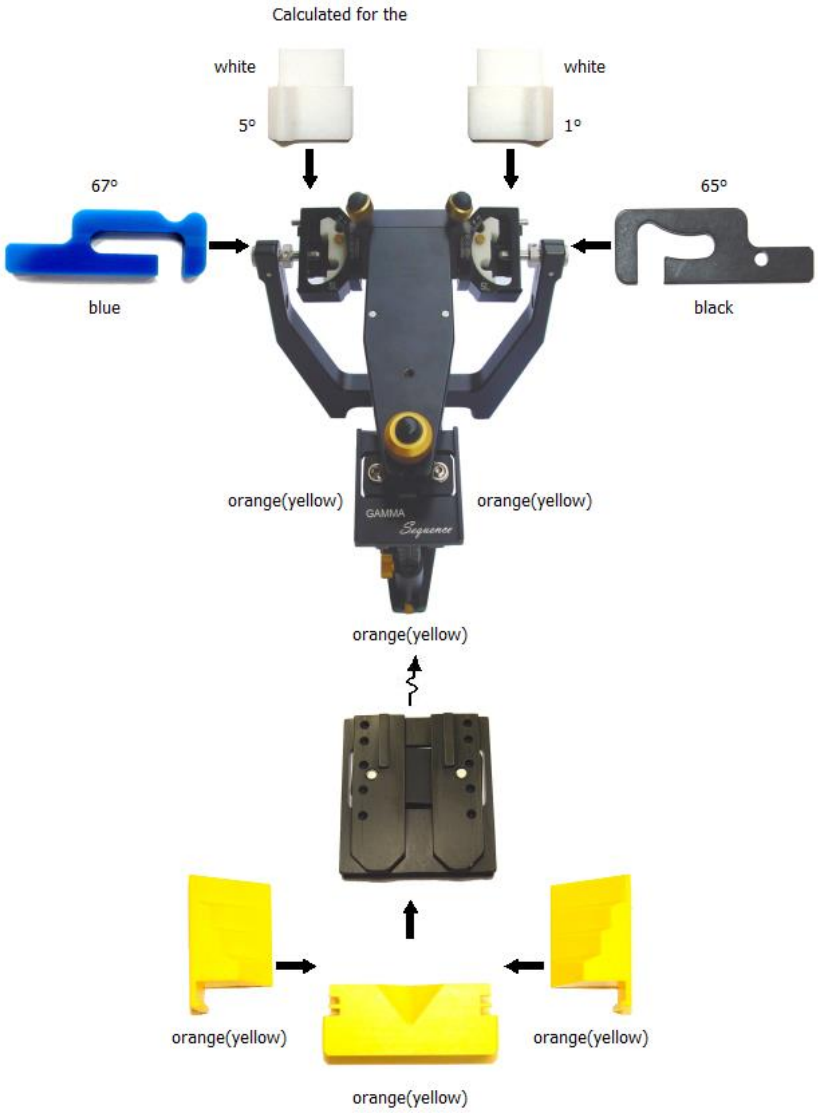
Speech 50-60 and Protrusion.



Mastication



Articulator settings

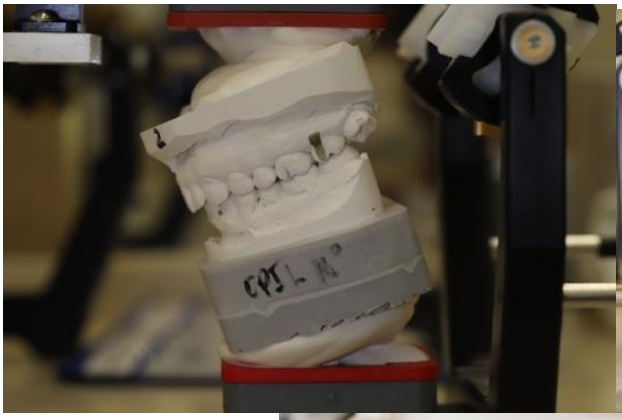


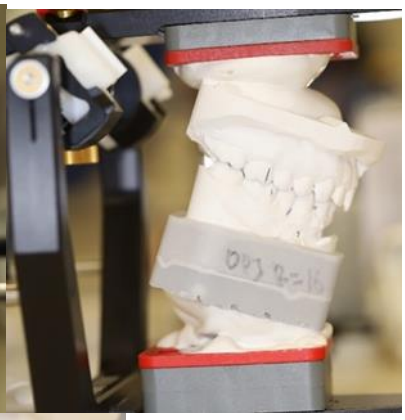
Treatment plan

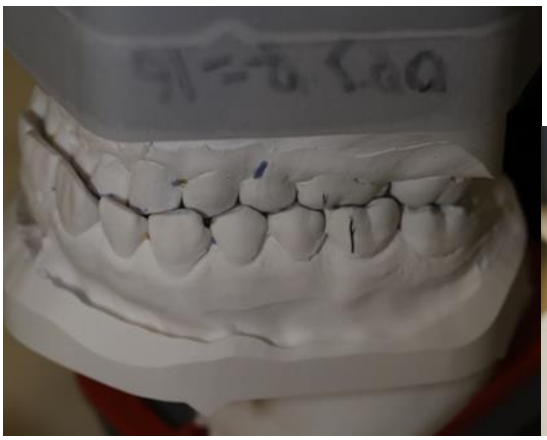
1. Wax-up
2. Long time temporaries
3. Final restorations

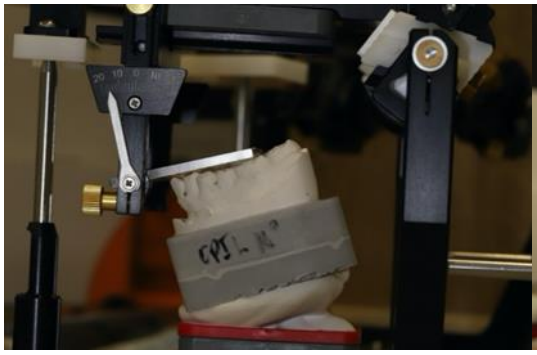
Wax-up
SCY R = 65 Blue insert
SCY L = 65 black insert
Bennet R = 5 white insert
Bennet L = 1 white insert
Anterior guidance = 65+10=75
OPIR = 23
OPIL = 23
Lower central and lateral incisors cut 1 mm in height.

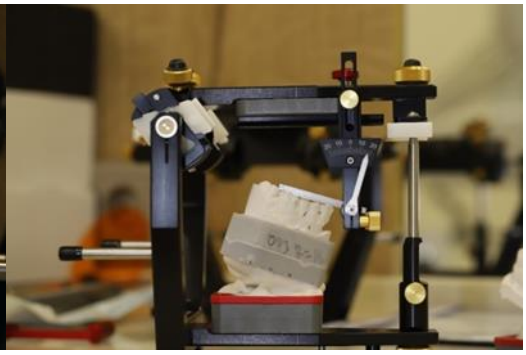
Casts mounted in articulator

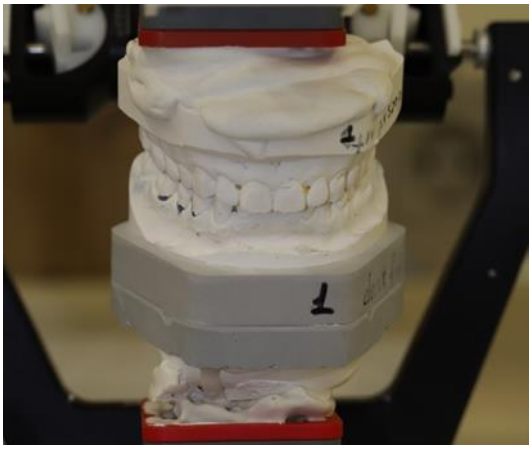








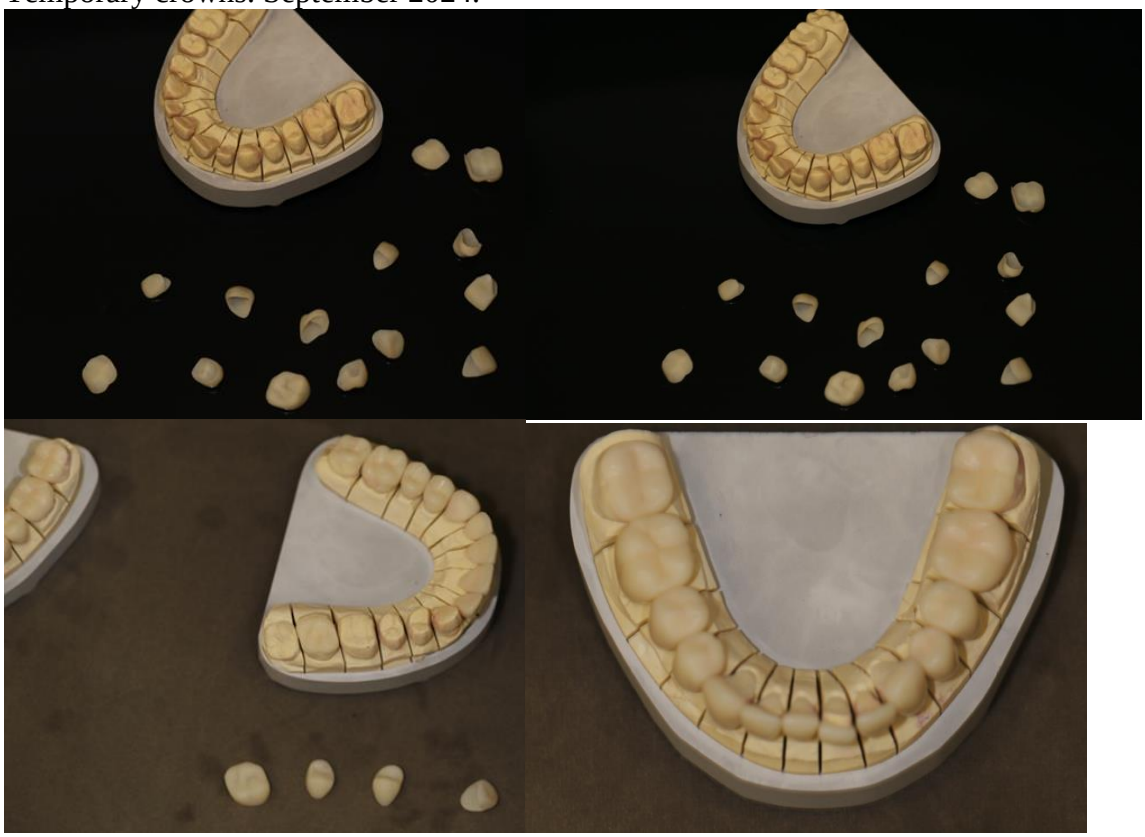




The first temporary crowns set was made using a silicone index. Canine teeth and the second molars are used as reference points for positioning template to the teeth and rebasing temporary restorations.

Digital wax-up

The second set of temporary crowns was made for esthetic and functional reasons. Teeth were fully prepared, impressions were obtained, models were mounted in an articulator and the wax-up was made using silicone indexes
Temporary crowns. September 2024.



Temporary crowns in the mouth. September 2024.

ICP and canine guidance

Final Restorations. October, 2024. Intraoral pictures.

Patient 2.
Date of birth 08.02.1970
Main concern: no posterior support, esthetics

List of problems

- Sagittal and transversal discrepancy of upper and lower jaw
- Passive centric arch and lower active centric arch does not fit together
- Interferences contact points on wisdom tooth
- Asymmetrical case
- Decreased lower facial height
- Esthetic and periodontal problems
- Breakage of ceramic restorations

Treatment plan

1.myopathic occlusal splint (with verticalization +2,5 mm from RP)
2.extact 38 and 28
3.wax-up dental class II, LFH= 45,2(+2,5 mm on IP)

- OPI flattening
- AG decrease

4.root canal retreatment 16,13,12,11,21,24,26,37,33,31,45,47
5.place implants 15,14,25,35,36,46
6. long time temporary

OPG

Intraoral photo

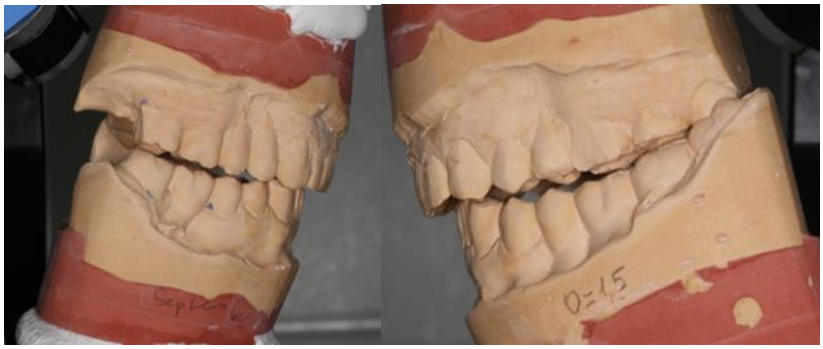
Mandible is shifted to the left. Esthetic problems

Chipping of ceramic on the left side. Incisors are inclined palatal

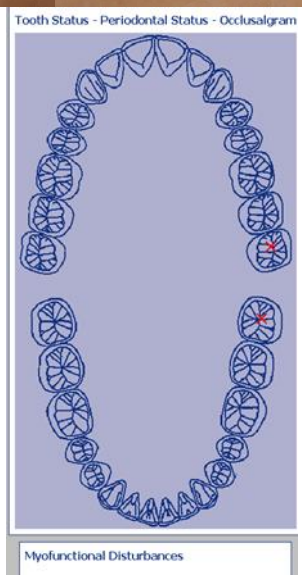
I STEP

Casts mounted in reference position

Casts mounted in reference position (incisal pin = +1,5 mm)

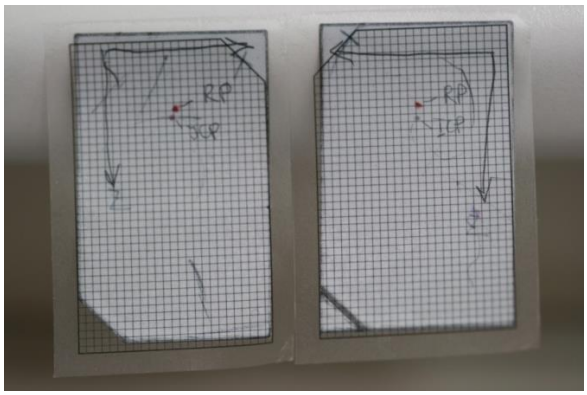


Interference contacts on 3-nd molar on the left side

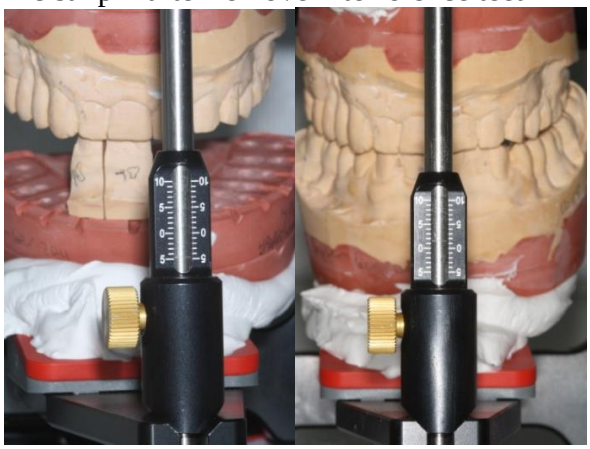


OPI=10

MPI

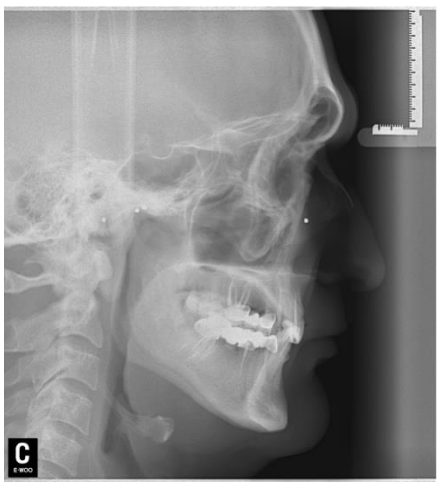


Incisal pin after remove interference teeth =-4,5 mm (-6 mm from RP)



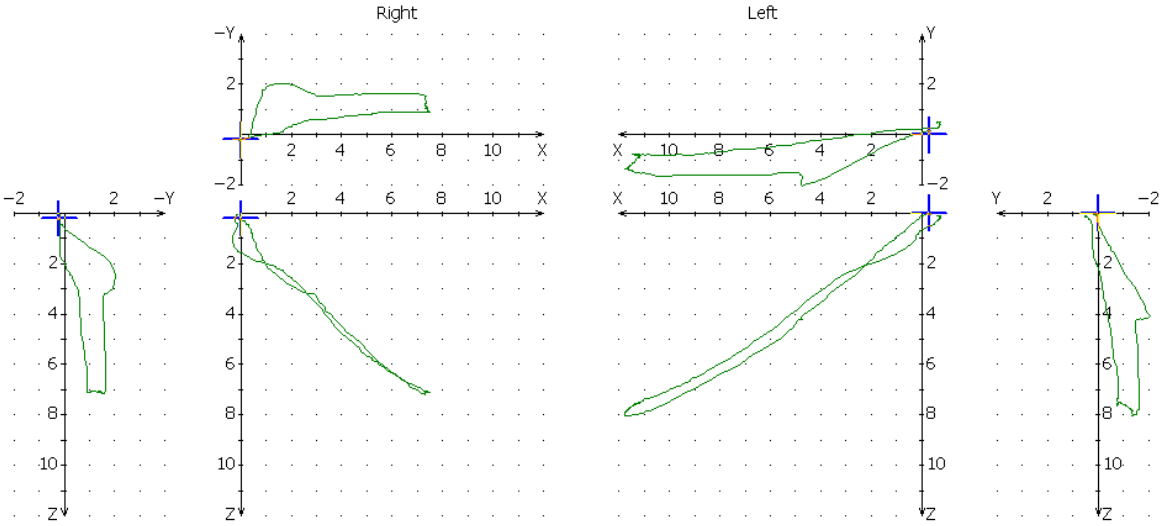
IP incisal pin difference between RP and ICP is 6 mm

Lateral X-ray



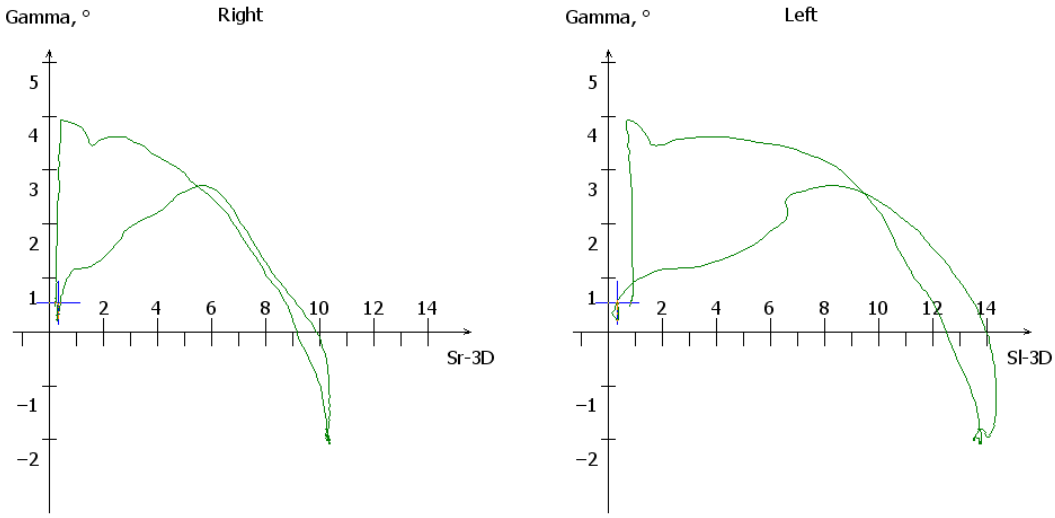
Protrusion-retrusion

Shift to the left side
Reciprocal shift in the right TMJ
Length of movement on the left side is higher because of decreasing of height, but SCI is flatter



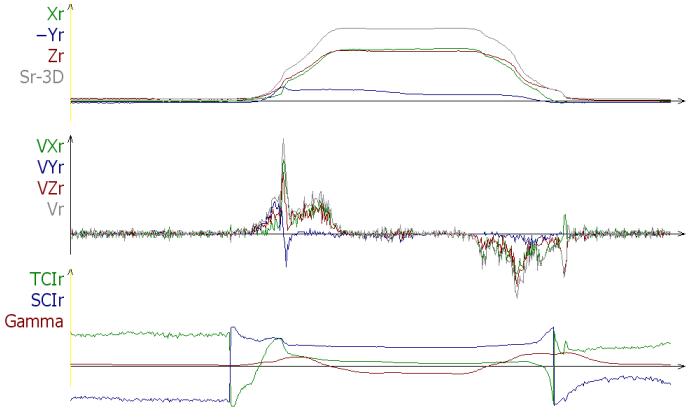
Translation-rotation in protrusion

Rotational component increased at the beginning of movement - block in frontal teeth^ and at the end of protrusion- negative rotation.

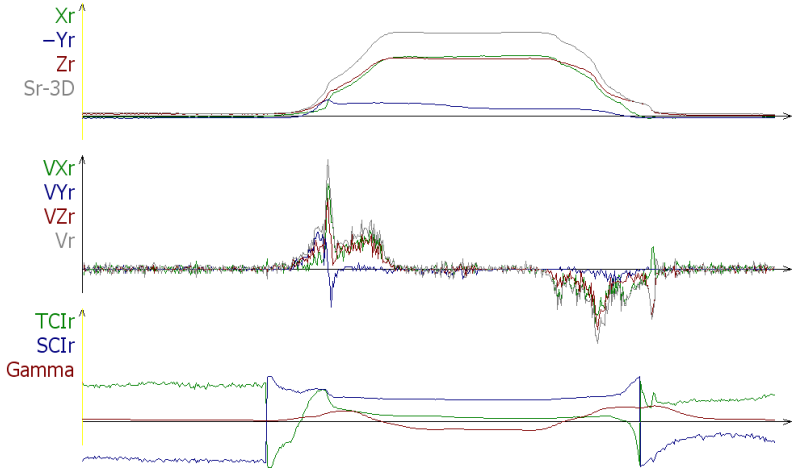


Time curve right side

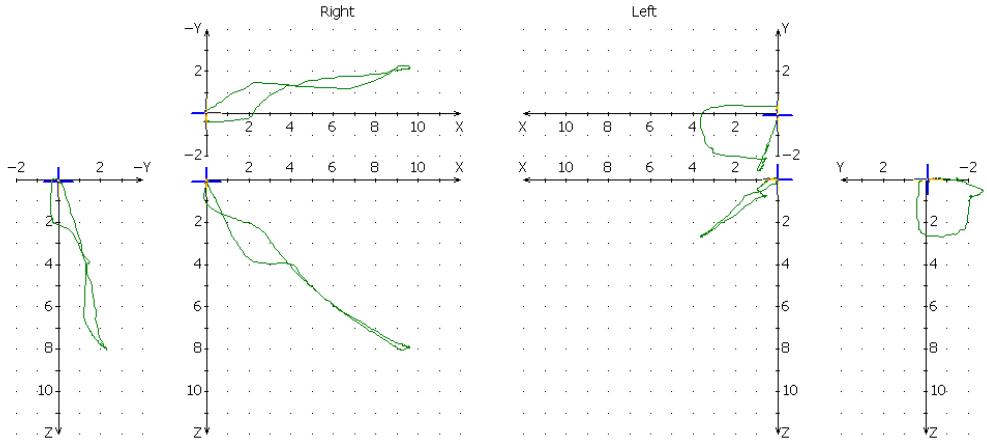
Muscle problems



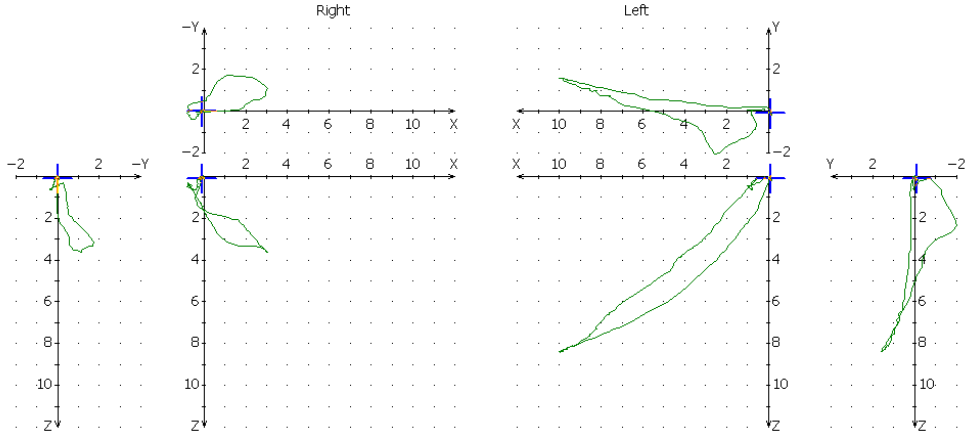
Time curve left side



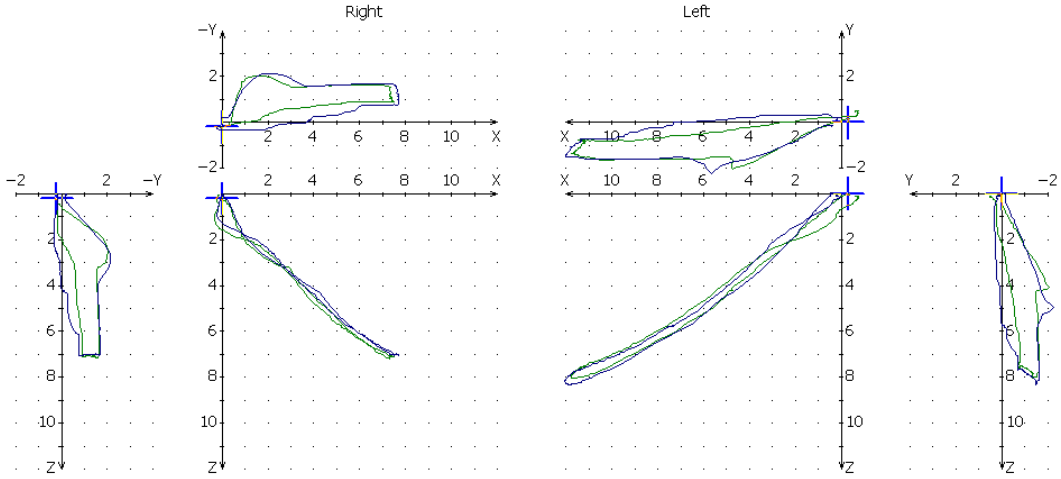
Mediotrusion right. Reciprocal click on right TMJ and avoidance pattern on the left.



Mediotrusion left. Negative Bennett movement

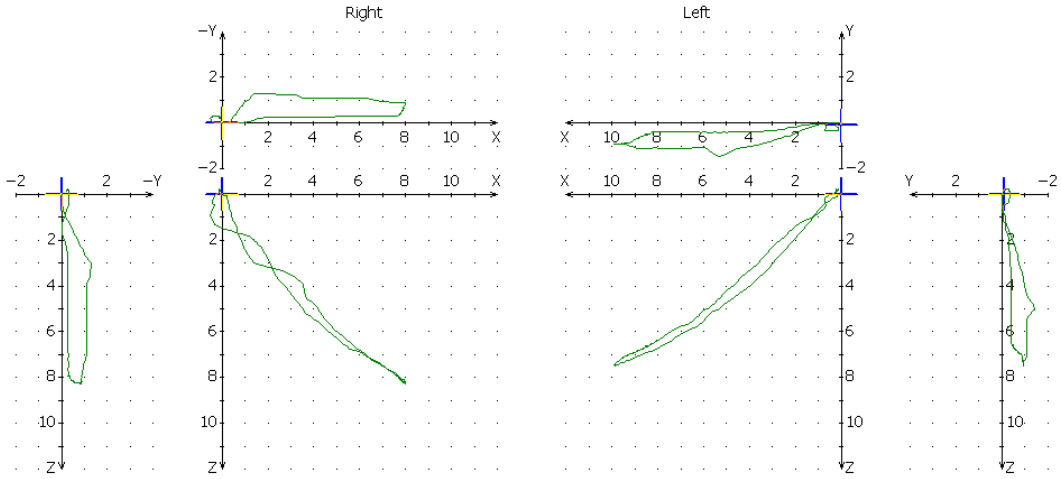


Protrusion-open

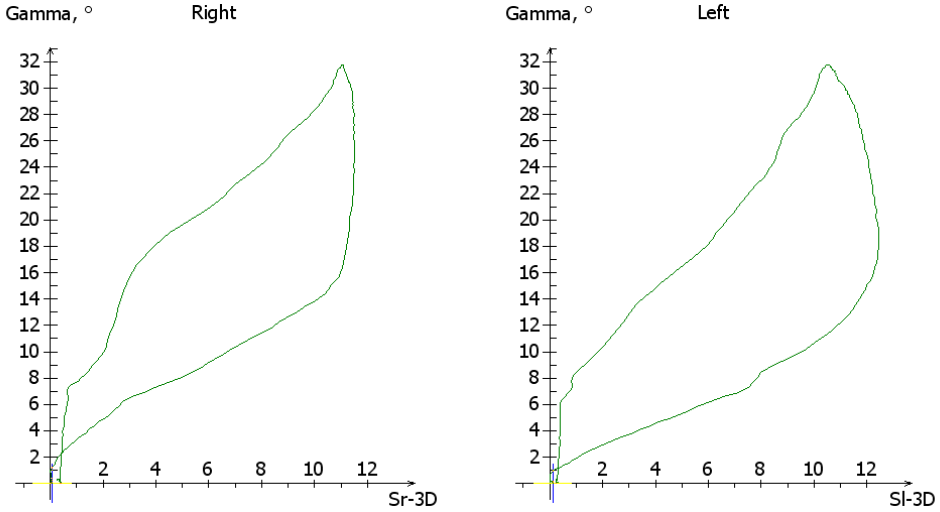


Open-close

Shift to the left – avoidance pattern (38)

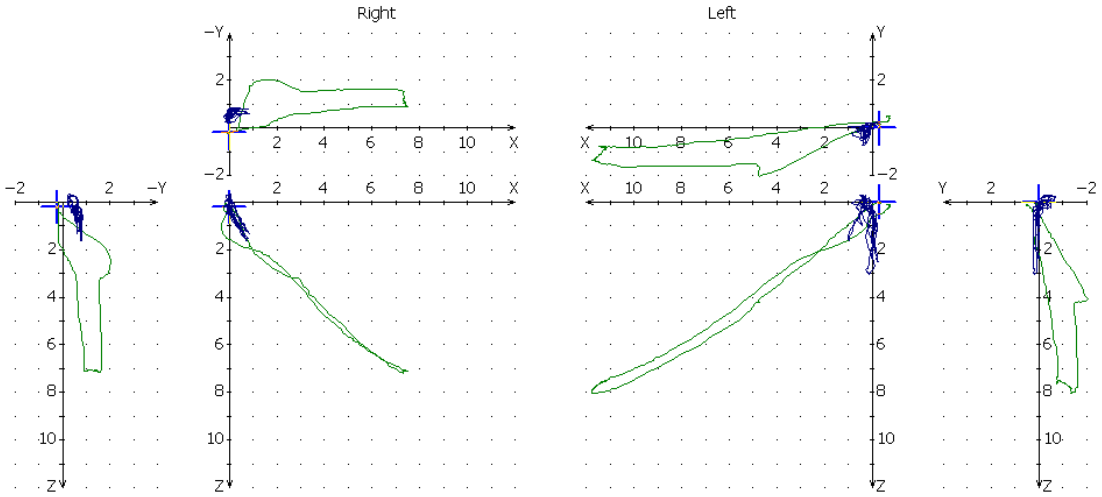


Translation-rotation

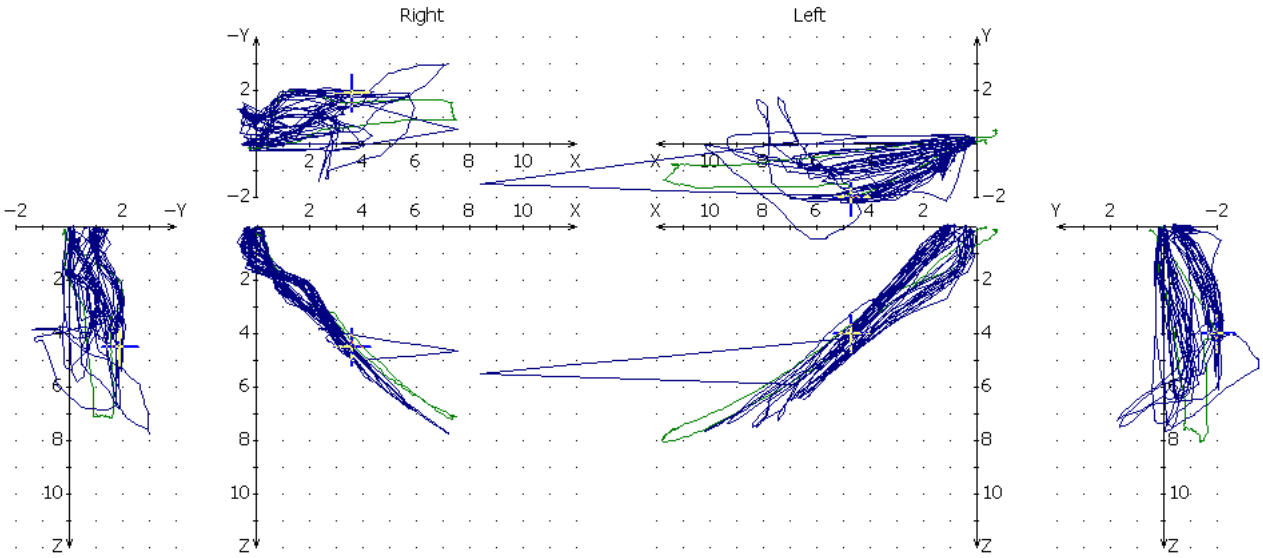


Protrusion-brux

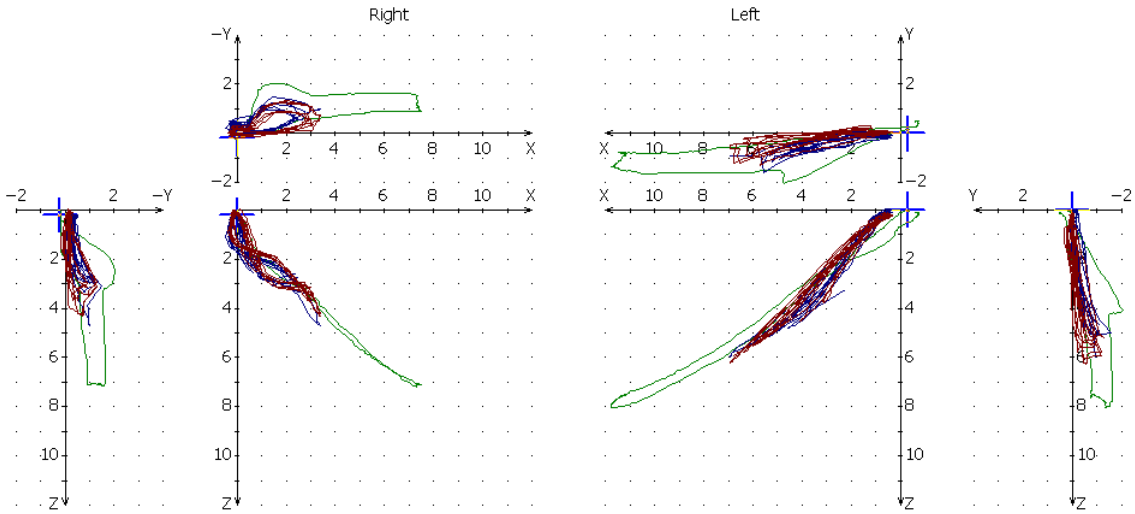
Shift to the left, and on the left side because of interference- distraction on z axis for 2 mm down in left TMJ during brux and right side – shift to the left side



Mastication. Protrusive type of chewing

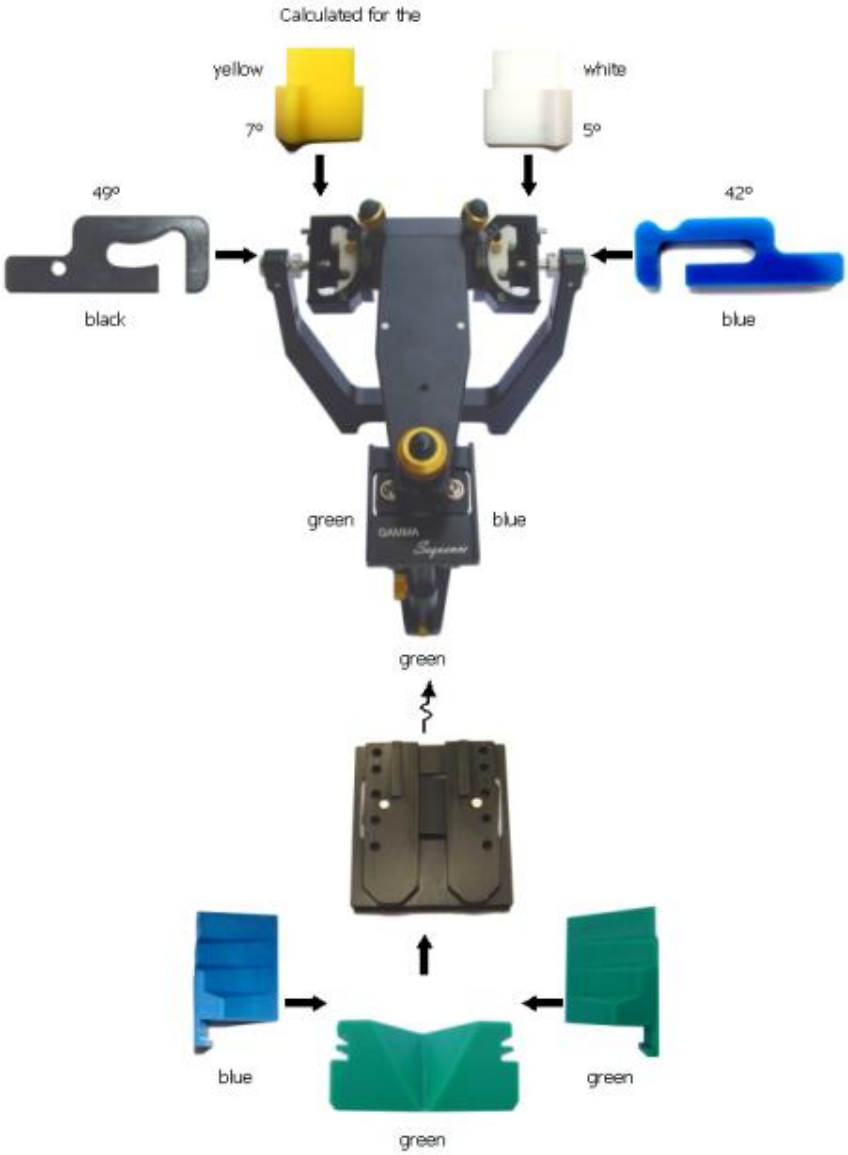


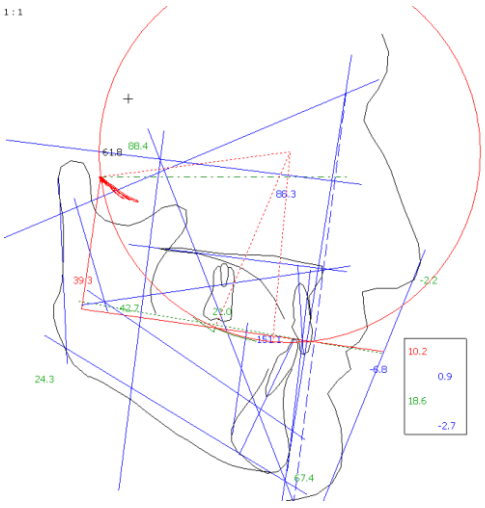
Protrusion- speech: Speech with reciprocal click

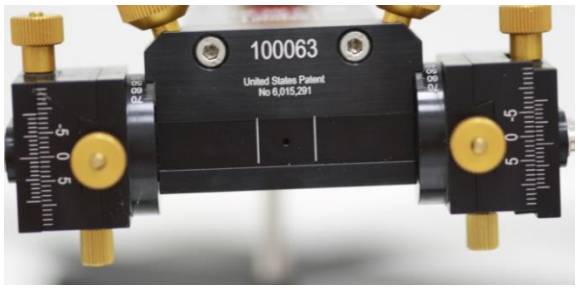


Skeletal Measurement	Norm	Value	Trend
Facial Axis	90. 0 °	88.4	
Facial Depth	91.5 °	88.2	1-
Mandibular Plance	21.5 °	24.3	
Facial Taper	68.0 °	67.4	
Mandibular Arc	31.2 °	39.3	2b
Maxillary Position	65.0 °	59.2	2-**
Convexity	-1.0 mm	-2.2	
Lower Facial Height (by R.Slavcek)	45.2 °	42.7	
Lower Facial Height to Point D	51.7 °	48.7	1-*
Dental Measurement	Norm	Value	Trend
Interincisal Angle	131.3 °	151.1	1+*
Upper Incisor Protrusion	4.3mm	0.8	1-*
Upper Incisor Inclination	23.1 °	10.2	
Upper Incisor Vertical	mm	4.5	
Upper Incisor Protrusion	1.2mm	-2.7	-1*
Upper Incisor Inclination	24.1 °	18.6	
Upper Molar Position	21.0mm	20.9	
Occlusal plane	Norm	Value	Trend
Occlusal plane-Axis Orbital Plane	-----	7.9	
Idealized Occlusal plane-Axis Orbital Plane	-----	10.7	
Distance Occlusal plane-Axis (DPO)	40.9mm	43.2	
Radus of Curve of Spee	-----	61.7	
Lip Embrasure	0.0mm	0,4	
Occlusal Plane XI Distance	-1.4mm	-3.4	
Functional Measurement (Lip Relation)	Norm	Value	Trend
Horizontal Condylar Inclination right	-----	46.4	
Horizontal Condylar Inclination left	-----	38.7	
Horizontal Condylar Inclination	-----	42.6	
Relative Condylar Inclination	-----	34.6	
Relative Condylar Inclination 6	-----	20.3	
Relative Condylar Inclination 7	------	8.5	
Relative Condylar Inclination 8	°	42.6	
Anterior Guidance	°		
Relative Anterior Guidance	°		
Esthetic Measurement (Lip Relation)	Norm	Value	Trend
Esthetic Plance	-2.9mm	-6.7	1-*

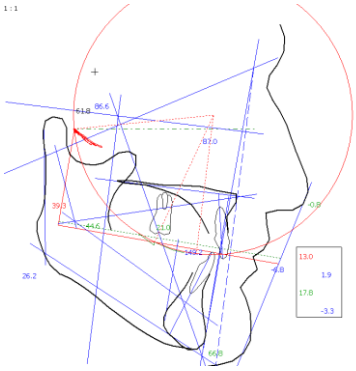
Articulator settings



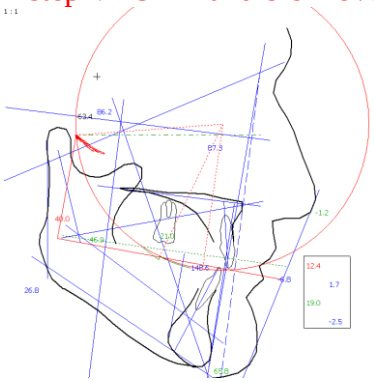




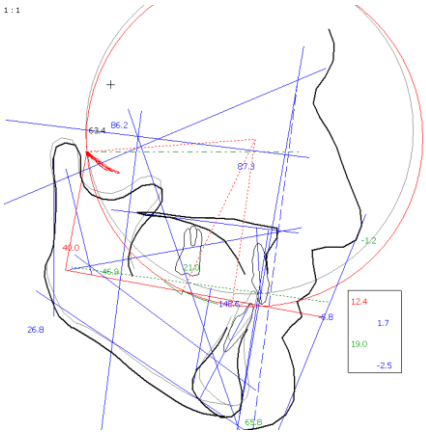
1 step VTO – increase LFH from 42,7 to 45,2 = +8 mm on incisal pin (from reference position +2 mm, but for disocclusion in molar region we increased for 4,5 mm from RP, Incisal Pin=6mm)



2 step VTO - Mandible moves 1,2 mm(x); 2,1 mm(z)- reciprocal click



Overlay



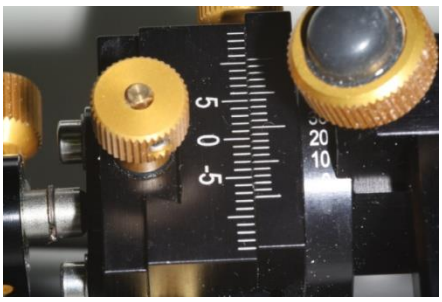
3-d STEP.

<u>Splint therapy Splint fabrication (Variator)</u>

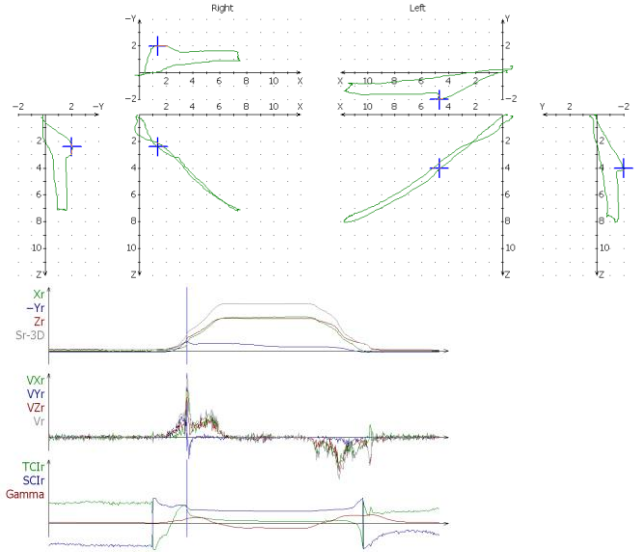
On condylography reciprocal click is on 1,8 mm of protrusion right TMJ. It means x=1,2 мм, Z= 2, –y= -0,5 мм

In this point acceleration is from 10 mm/s to 54 mm/sec

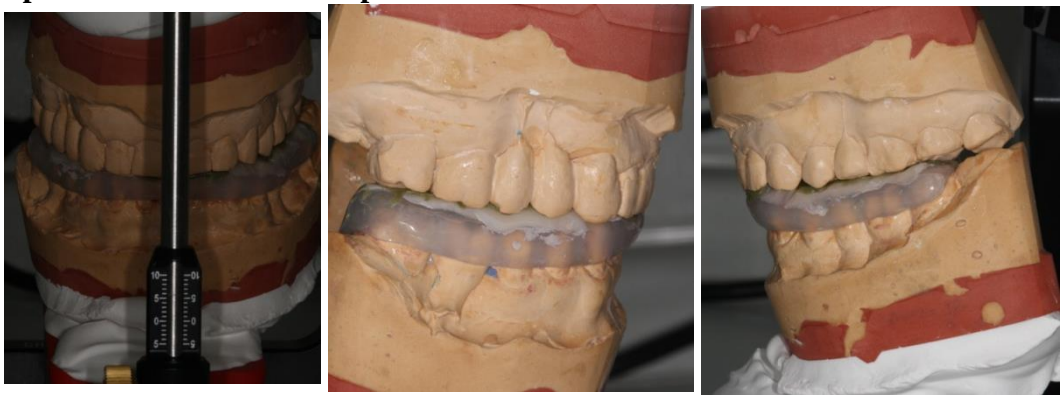
Verticalization till +4,5 mm on incisal pin (LFH= 42,7, norm is 45,2)

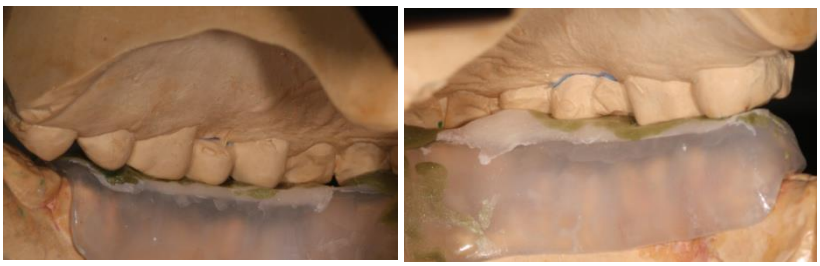


THP – time curves



Splint fabrication. Incisal pin =6 mm





Splint settings

OPI Right= 4 degrees, OPI left = 10 degrees
SCI Right= 49 degrees
SCI left = 42 degrees (according to condylography
OPI clinically right = 4 degrees
OPI clinically left= 10 degrees
Right side 49 – 4= 45 degrees, 45- 30 = 15 degrees DOA right side,
DOA Left side 42 – 10= 32 degrees, 32-30= 2 DOA left side strong interference
Change OPI for right side – from 4 to 9 degrees

Change OPI for left side – from 10 to 2 degrees
Increase VD = +6 mm on incisal pin (from 44,3 degrees to 46 degrees)

4 STEP

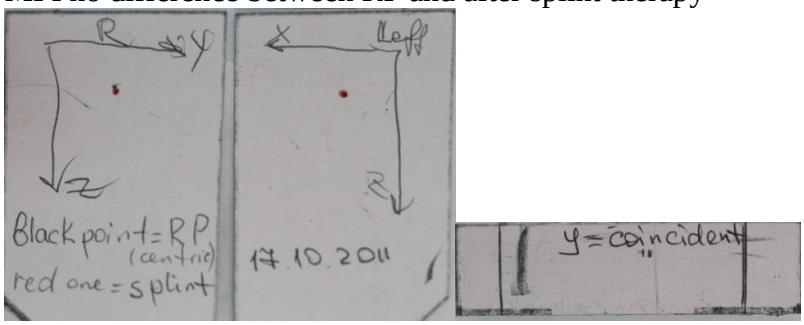
After splint -therapy. After splint –therapy Incisal pin = 0,5 mm







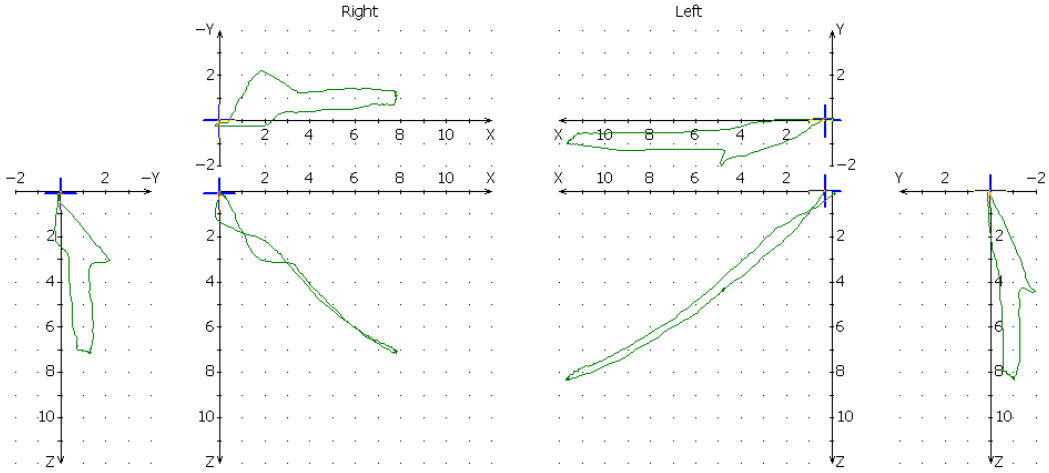
MPI no difference between RP and after splint therapy



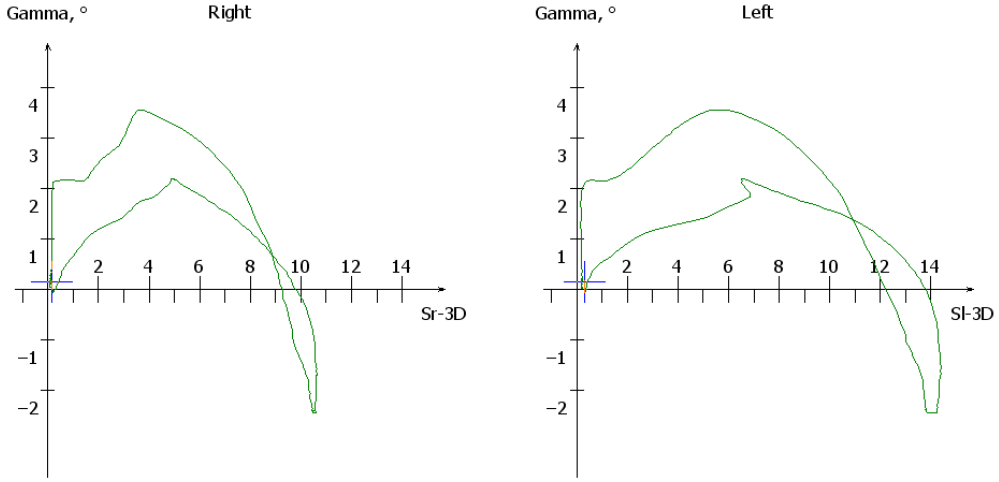
5 STEP. **Extraction of wisdom tooth** and **2-nd condylography after 3 months after Extraction of wisdom tooth (February 2012)**

6 STEP. **2-nd Condylography after wisdom tooth extraction**

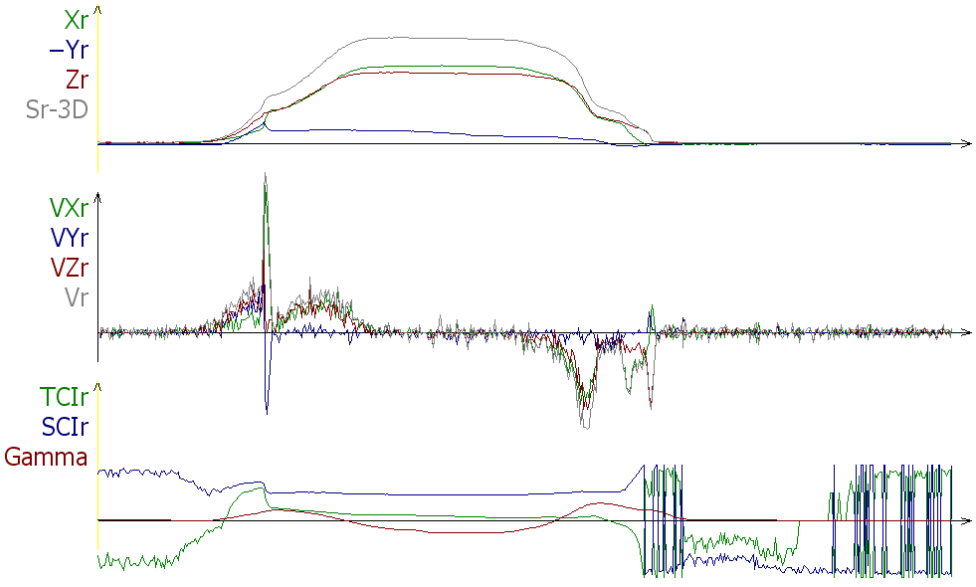
Protrusion –retrusion – reciprocal click right TMJ



Rotation- translation



Protrusion time curves

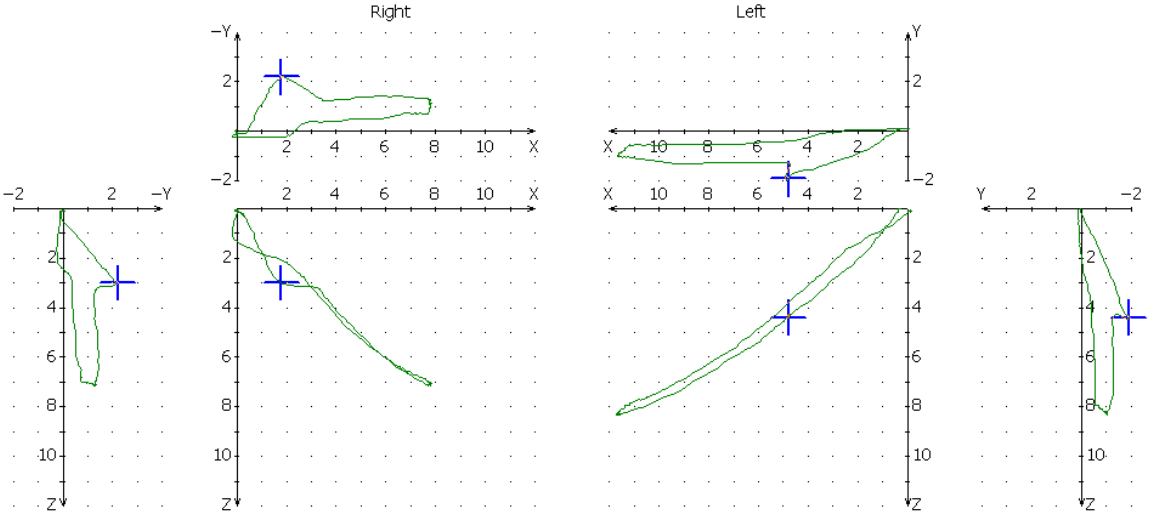


Step 6A. THP for right TMJ

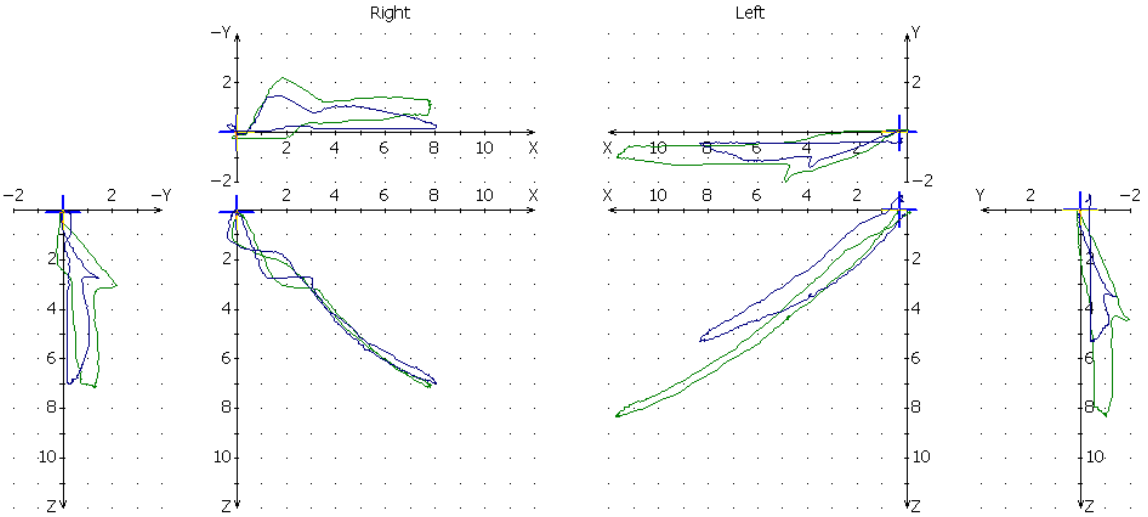
Right side – x=1,8 mm, z=3 mm, y= - 2 mm
Left side x= 4,8, z=4,4. This position on splint doesn't work
Good muscle reaction (except TMJ statically and rotation)
Splint positive result

R	L
X=2mm	X=2 mm
Z=3mm	Z=3 mm
Y= 0 mm	

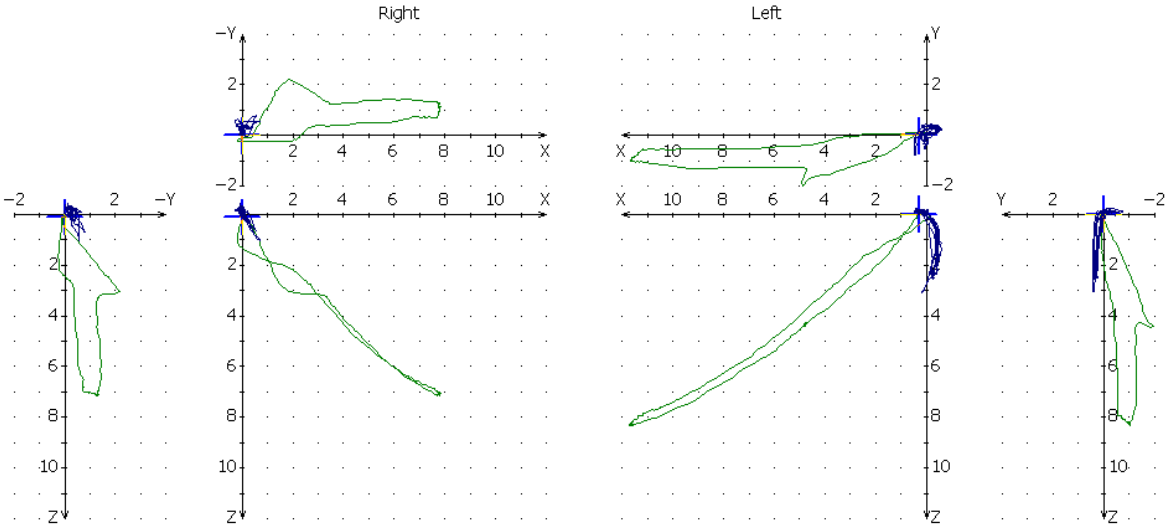
Open-close



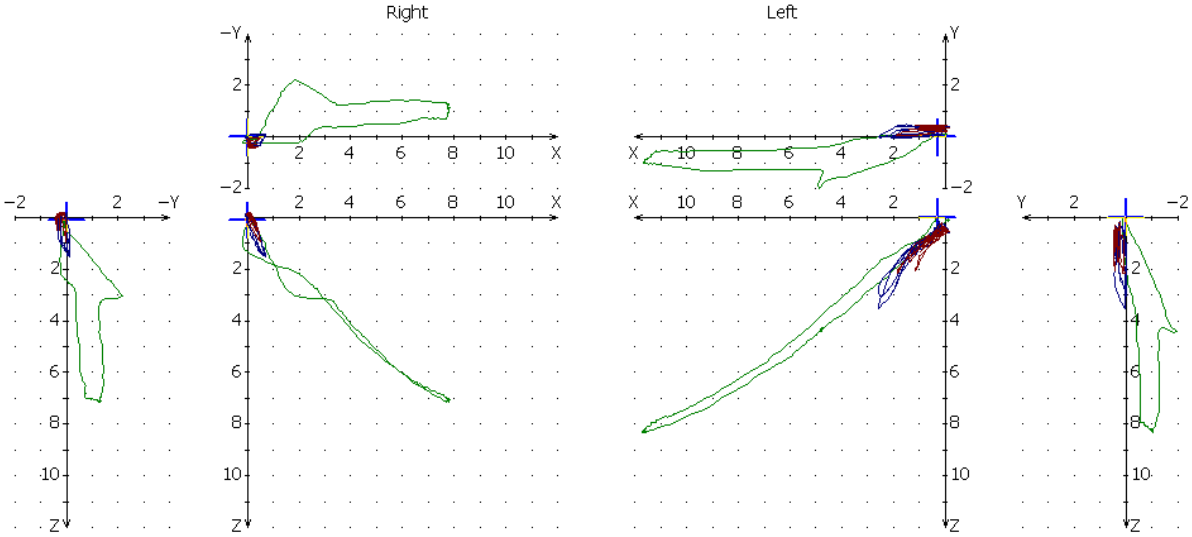
Protrusion- open



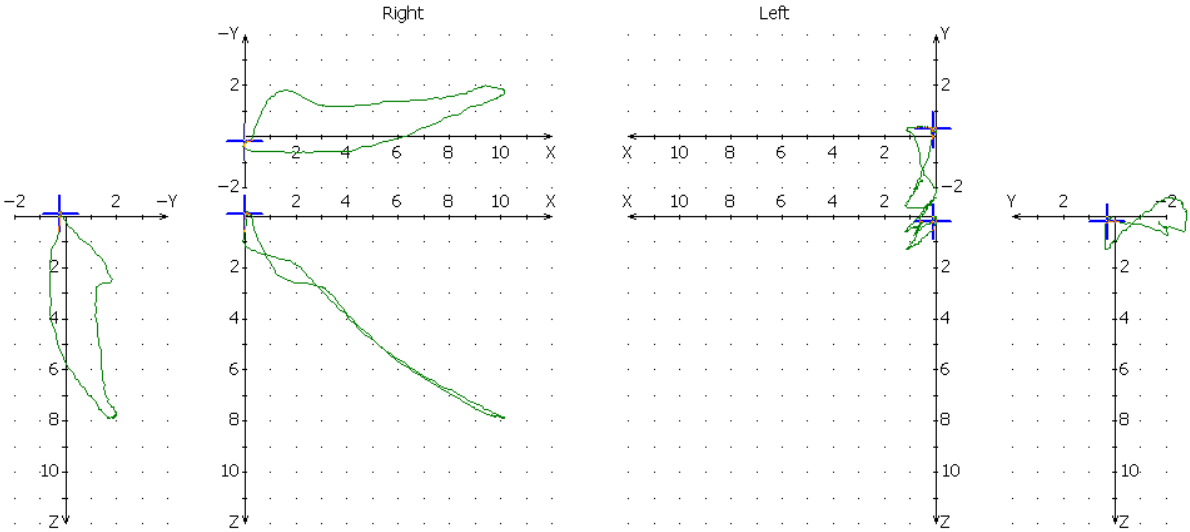
Protrusion- brux(on right TMJ – distraction,)



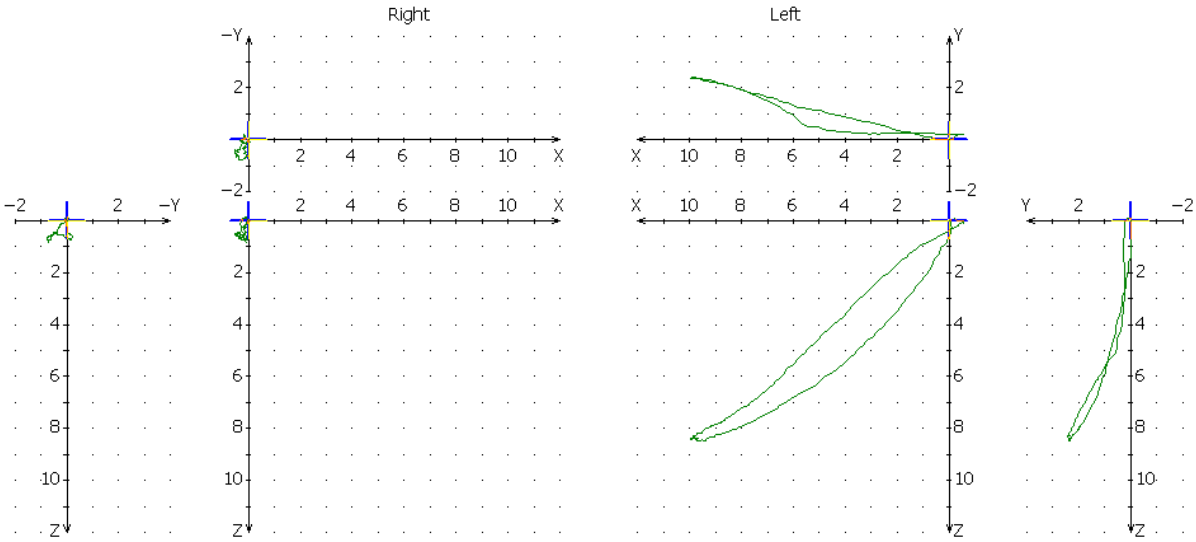
Speech English on retrusive movement



Mediotrusion right



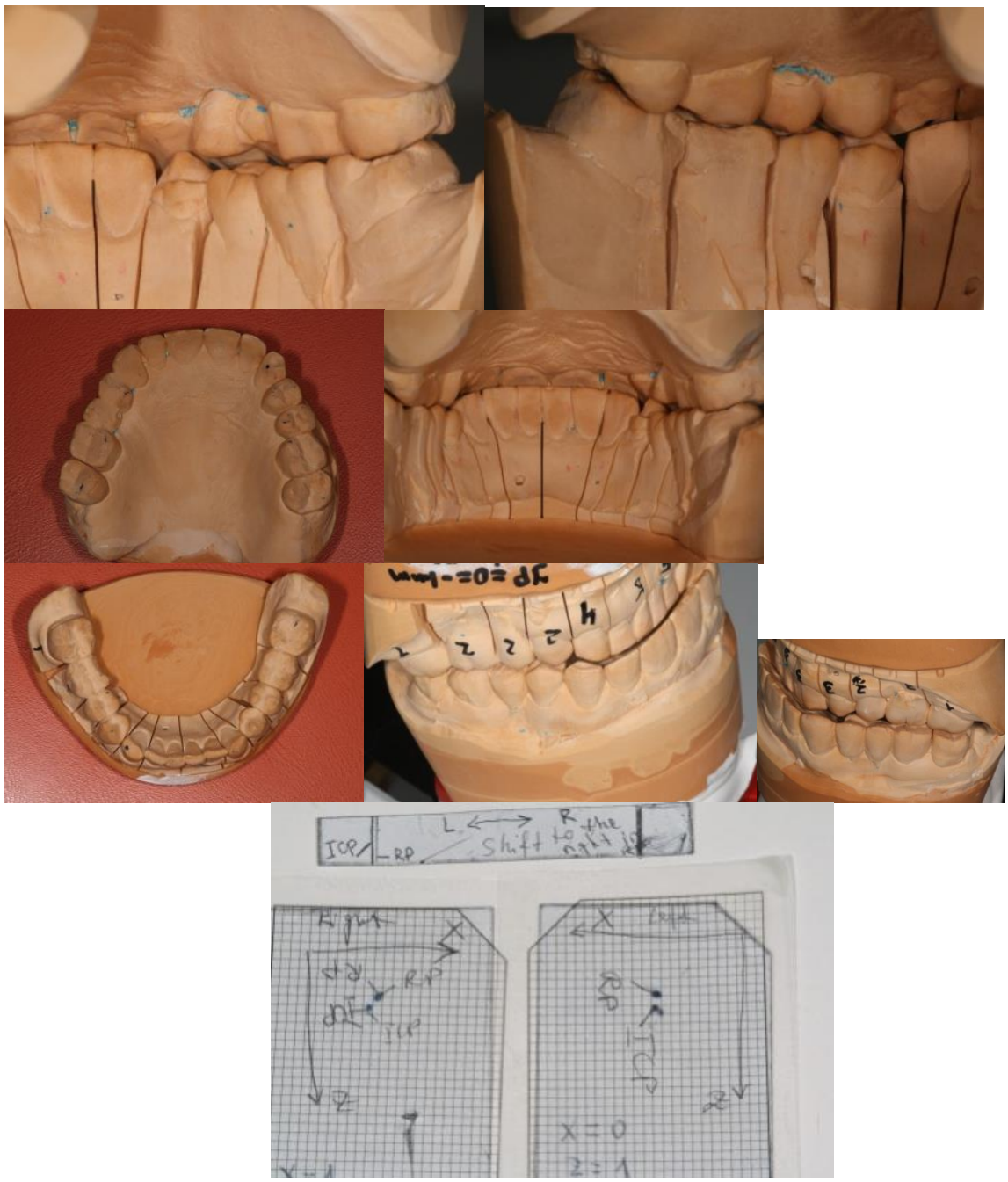
Mediotrusion left



STEP 7. Casts mounting after 2-nd Condylography

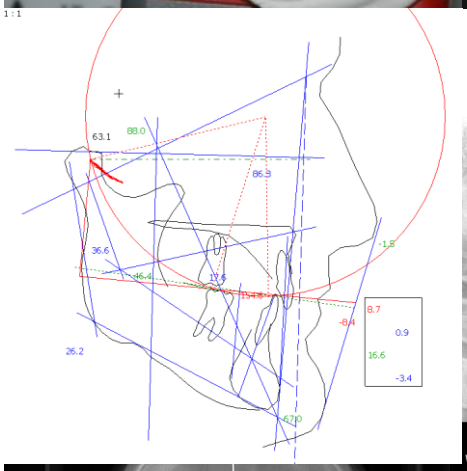
Casts in RP after 2-d condylography (after extraction of wisdom tooth) March, 2012.

After we remove stemps with interferences om 17 and 47 and 27-37 incisal pin decreased from RP= - 1 mm to -4 mm. It means that Incisal Pin decreased during diagnostical remove interference – 3 mm


ICP
RP
L
R
Shift
X=0
Z=1


20 10 0 10 20


20 10 0 10 20


63.1
88.0
86.3
36.6
46.4
-1.8
8.7
0.9
16.6
-3.4
-8.4
26.2
67.0


R
VATECH


C
VATECH


C
VATECH

Skeletal Measurement	Norm	Value	Trend
Facial Axis	90. 0 °	88.0	
Facial Depth	91.5 °	86.8	1-
Mandibular Plance	21.5 °	26.1	1d*
Facial Taper	68.0 °	66.9	
Mandibular Arc	31.2 °	36.5	1b
Maxillary Position	65.0 °	59.2	2-**
Convexity	-1.0 mm	-1.5	
Lower Facial Height (by R.Slavcek)	45.2 °	46.4	
Lower Facial Height to Point D	51.7 °	50.9	1-*
Dental Measurement	Norm	Value	Trend
Interincisal Angle	131.3 °	154.6	2+*
Upper Incisor Protrusion	5.6mm	0.9	1-*
Upper Incisor Inclination	26.4 °	8.7	2-**
Upper Incisor Vertical	mm	4.4	
Upper Incisor Protrusion	1.2mm	-3.4	-1*
Upper Incisor Inclination	24.1 °	16.6	
Upper Molar Position	21.0mm	17.6	1-*
Occlusal plane	Norm	Value	Trend
Occlusal plane-Axis Orbital Plane	-----	5.4	
Idealized Occlusal plane-Axis Orbital Plane	-----	9.4	
Distance Occlusal plane-Axis (DPO)	40.9mm	41.2	
Radus of Curve of Spee	-----	63.1	
Lip Embrasure	0.0mm	1.2	
Occlusal Plane XI Distance	-1.4mm	-3.6	
Functional Measurement (Lip Relation)	Norm	Value	Trend
Horizontal Condylar Inclination right	-----	45.0	
Horizontal Condylar Inclination left	-----	44.2	
Horizontal Condylar Inclination	-----	44.6	
Relative Condylar Inclination	-----	39.2	
Relative Condylar Inclination 6	-----	32.6	
Relative Condylar Inclination 7	------	32.5	
Relative Condylar Inclination 8	°	44.6	
Anterior Guidance	°		
Relative Anterior Guidance	°		
Esthetic Measurement (Lip Relation)	Norm	Value	Trend
Esthetic Plance	-2.9mm	-8.3	2-*

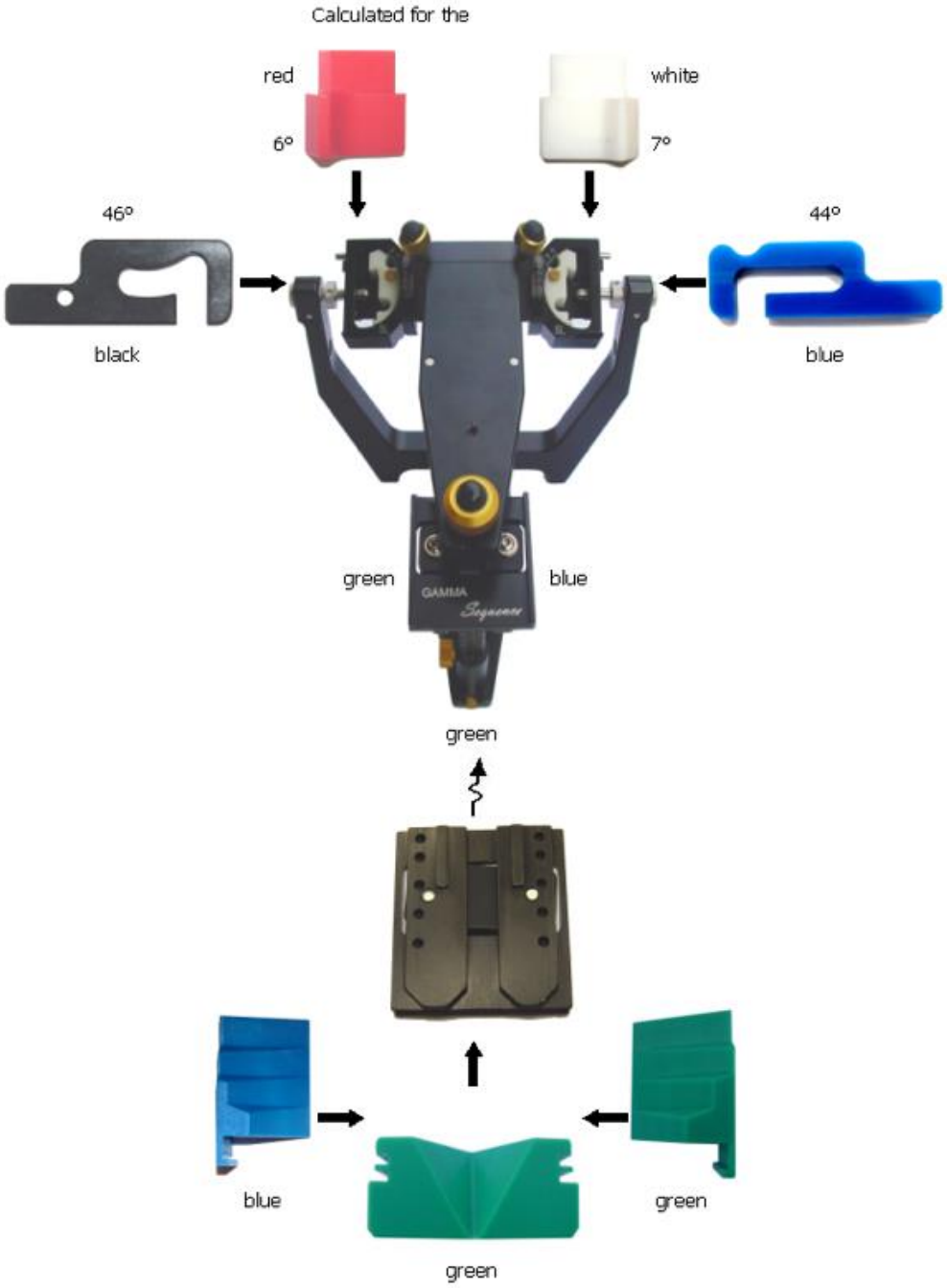
STEP 8. Wax-up settings

- THP Remount the casts in RP

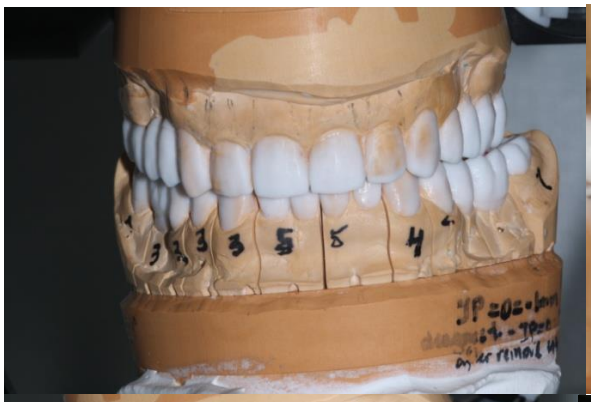
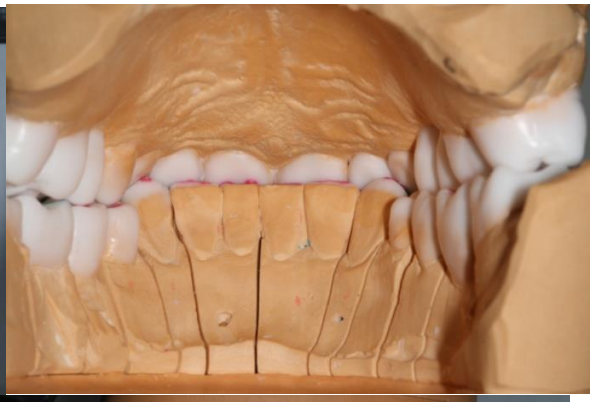
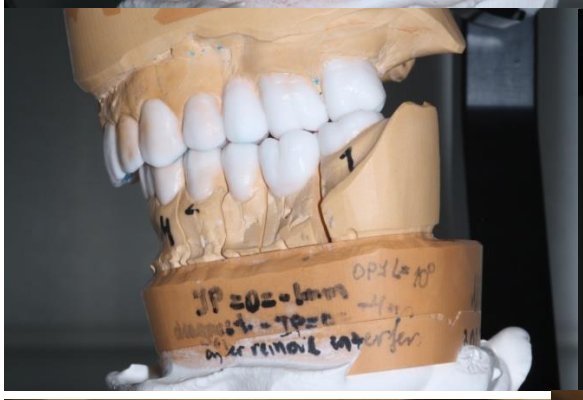
RIGHT	Left
X=2mm	X=2 mm
Z=3mm	Z=3 mm
Y= 0 mm	

- LFH +2 mm on incisal pin from RP & The Value on Incisal pin should be +1 mm for wax-up. Incisal pin = -1 mm (RP) III class- verticalization possible
- SCI R black insert =45 degrees
- SCI L blue insert = 45 degrees.
- OPI Right= 4 degrees.
- OPI Left = 10 degrees.
- DOA Right = 45 -4=41 – 30 = 11 – norm.
- DOA Left= 45- 10= 35 -30 = 5 degrees – interference Change OPI left to 5 degrees.
- It is symmetry in OPI R and L= 5 degrees.

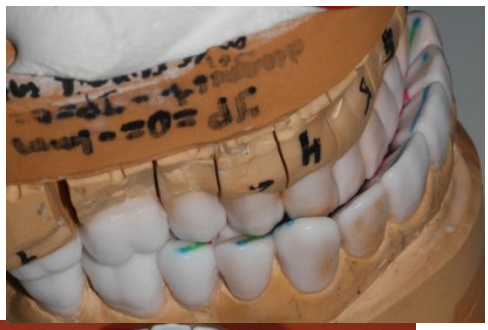
- Bennet red insert right side 6 degrees and left side white insert – 7 degrees.



STEP 9. Wax-up



STEP 10. Long time temporaries.

Now we need long time temporaries and next step – implants and then in 10-month restorations.





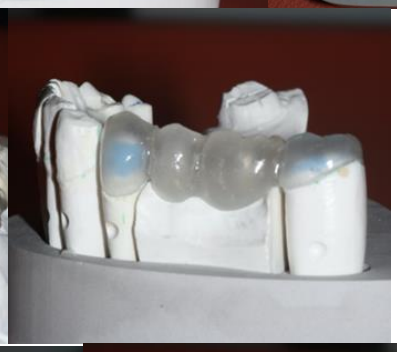







STEP 11. Surgery. Template





Clinometr. Tooth 12 Splint for gingiva correction.

STEP 11. After implantology. September 2013.

The same patient. Date of birth 08.02.1970
Date of examination 24.01.2025

Chief complain: no posterior support, ceramic chipping, no contacts 13-14, 23-24. Low chewing efficacy on the left side. Major chewing side is left side. Spasm in the neck.

Abfractions
Grinding facets
No anterior guidance
No posterior support
No canine guidance
Lower incisors crowding

Clinical Functional analyses

Special Medical Analys Do you have or did you ever have anxious with regard to points 1-12?					
	yes	no		yes	no
1.Infections		X	7.Urogenitial problems		X
2.Cardo-vascular systems	X		8.Central nervous systems	X	
3.Digestive systems	X		9.Psychological problems	X	
4.Metabolc systems	X		10.Rheumatic disease		X
5.Allergies			11.Hormonal disease		X
6.Respratory systems		X	12.Special problems		X
Main concern	SPASM IN MANDBLE				

Dental History Analysis			
	Valuation	Yes	No
1.Do you have problems when you chew?			
2.Do you have problems when you are talking?	2	X	
3.Do you have problems in closing your teeth properly?			X
4.Are any of your teeth especially sensitive?			X
5.Do you have problems when you open your mouth very wide?			X
6.Do your jaw joints make noise and if so, on what side?			X
7. Do you have pain in the area of your jaw joints?			X
8. Do you suffer from headaches?			X
9.Do you have suffered from cramps or spams in your head, neck or throat?	3	X	
10.Do you have in general problems with your posture,	2	X	
Occlusal Index	2.33		
11.Have you ever had a serious accident?			X
12.Did you have one or more oral intubations?			X
13.Have you ever had orthodontic treatment or….			X
14.Have you had a treatment with a splint?			X
15.Are you grinding or pressing with your teeth?			X
16.Do you think that treatment is necessary?			
17.Do you think that there is a serious disorder or illness?		X	
18.When was the last time you had dental treatment and what was done?			
How would you describe your psychic behaviour? ☐Happy ☐sad ☐calm ☐exoted ☐self-controlled ☐lack of self control			

High occlusal index

Muscle palpation and Brainstem nerve analyses

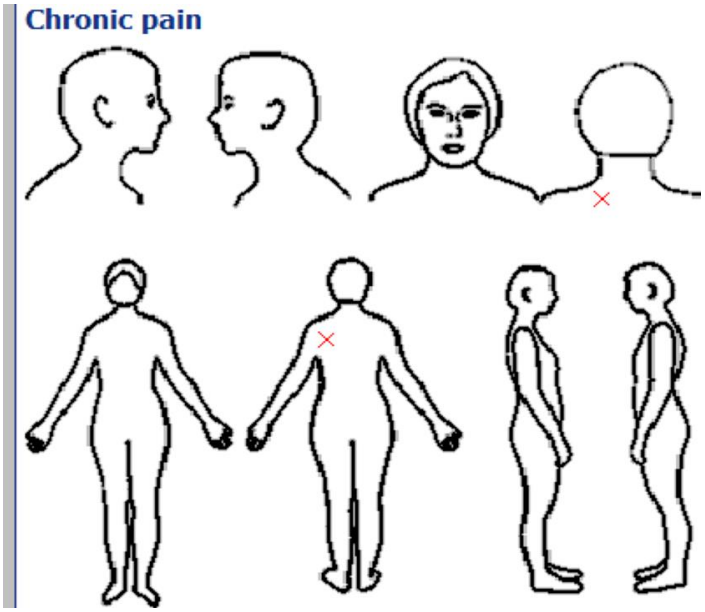
Muscle diagnosis				
	right		left	
	+	++	+	++
1.should and neck				X
2.atlanto-occipital region				
3.a M. temporalis ant				
3.c M. temporalis med				
4.a M. temporalis post				
4.b M. masseter (superficial)		X		
5. Tuber maxillae				
6. M. pterygoids medialis				
7. M. mylohyoideus				
8. M. digastricus				
9. suprahyoidale M.				
10. infrahyoidale M				
11. Larynx				
12. M.sterno-cliedo-mastodeus				
13.M. omohyoideus				
14. Tongue				
15.Comparative palpation of jaw joints a) lateral poles, statically b) lateral poles, in rotation c)retral joint space d)Lig.temporo-mandibulare		 X X		

Muscle palpation

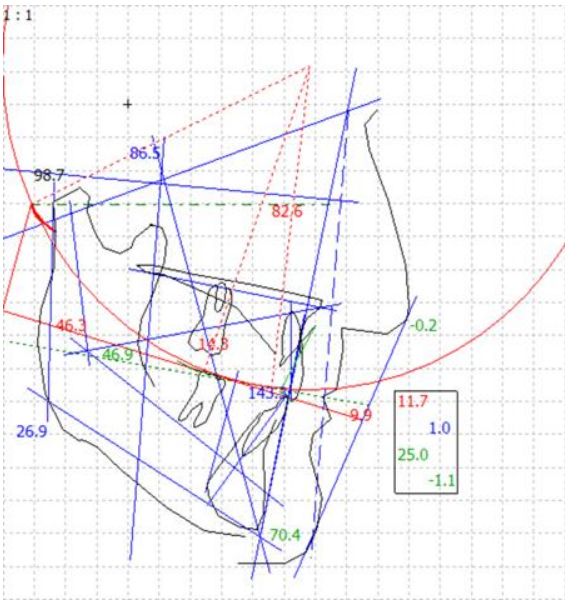
Posture. 1,2, 7, 12, 13, 14
Closing3a, 3b, 4a, 4b, 5
Opening / Protraction 8, 9,10
Retraction 3c, 8
Medio-/Laterotraction 6, 3a, 4a

Hyoid-Position 8, 9, 10, 11, 13
Functions 7, 8, 9,10, 11, 14
TMJ 15a, 15b, 15c, 15d
POSTURE. CLOSING. TMJ

Chronic pain and interferences



Slavicek Interactive Verbal Analysis



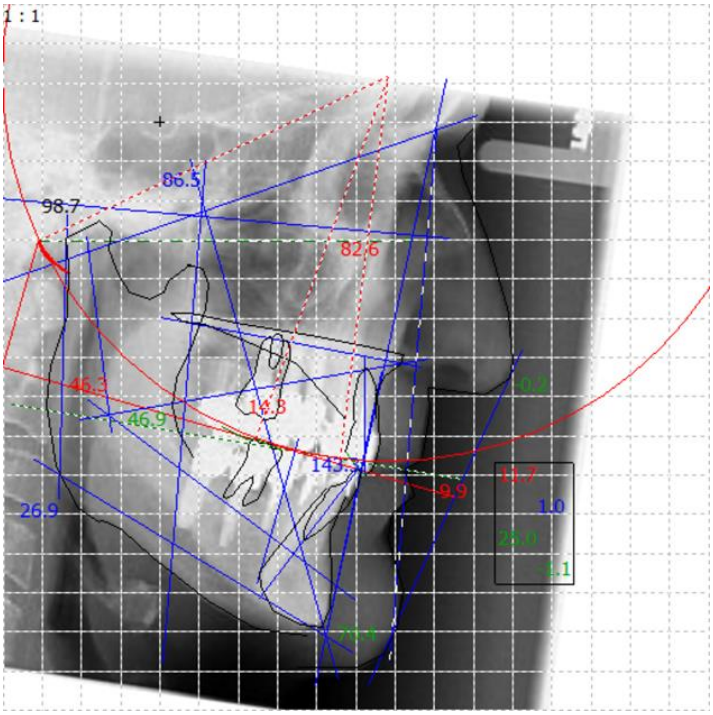
The skeletal trend of the skull is dolichofacial
The skeletal trend of the mandible is extremely brachyfacial
Skeletal class is I
The maxilla is positioned retrognathic, with tendency to neutral
The mandible is positioned retrognathic, with tendency to neutral
The lower facial height is normal
Dental class unknown
The protrusion of the upper incisor is diminished
The inclination of the upper incisor is strongly diminished
The protrusion of the lower incisor is normal
The inclination of the lower incisor is normal
The interincisal angle is increased
Occlusal concept: Tendency to group function

Explanation

Determinants	Norm	Value	Trend
Facial Axis	90.0 °	86.5	1D*
Facial Depth	91.5 °	82.6	2−**
Facial Taper	68.0 °	70.4	
Mandibular Plane	21.5 °	26.9	1D*
Related Values	**Norm**	**Value**	**Trend**
Bjoerk Sum	396.0 °	385.7	4−***>
Facial Length Ratio	63.5 %	74.2	5+***>
Y Axis to S N	67.0 °	70.5	1+*
Y Axis (Downs)	61.8 °	67.2	1+*
S N to Gonion Gnathion Angle	31.6 °	25.7	1−*

Anterior Guidance 53 degrees

Skeletal Measurement	Norm	Value	Trend
Facial Axis	90. 0 °	86.5	1d
Facial Depth	91.5 °	82.6	2-
Mandibular Plance	21.5 °	26.9	1d*
Facial Taper	68.0 °	70.4	
Mandibular Arc	31.2 °	46.2	3b
Maxillary Position	65.0 °	60.1	1-**
Convexity	-1.0 mm	-0.2	
Lower Facial Height (by R.Slavcek)	45.2 °	46.8	
Lower Facial Height to Point D	51.7 °	51.5	
Dental Measurement	Norm	Value	Trend
Interincisal Angle	131.3 °	143.2	1+*
Upper Incisor Protrusion	5.6mm	1.0	1-*
Upper Incisor Inclination	26.4 °	11.7	2-**
Upper Incisor Vertical	mm	0.9	
Upper Incisor Protrusion	1.2mm	-1.1	
Upper Incisor Inclination	24.1 °	24.9	
Upper Molar Position	21.0mm	14.2	3-*
Occlusal plane	Norm	Value	Trend
Occlusal plane-Axis Orbital Plane	-----	15.9	
Idealized Occlusal plane-Axis Orbital Plane	-----	10.3	
Distance Occlusal plane-Axis (DPO)	40.9mm	33.5	
Radus of Curve of Spee	-----	98.7	
Lip Embrasure	0.0mm	-3.2	1-
Occlusal Plane XI Distance	-1.4mm	4,2	1+
Functional Measurement (Lip Relation)	Norm	Value	Trend
Horizontal Condylar Inclination right	-----	57.7	
Horizontal Condylar Inclination left	-----	55.5	
Horizontal Condylar Inclination	-----	56.6	
Relative Condylar Inclination	-----	40.7	
Relative Condylar Inclination 6	-----	34.8	
Relative Condylar Inclination 7	------	29.7	
Relative Condylar Inclination 8	°		
Anterior Guidance	°	52.7	
Relative Anterior Guidance	°	36.8	
Esthetic Measurement (Lip Relation)	Norm	Value	Trend
Esthetic Plance	-2.9mm	-9.9	3-*



Problem list

- Low chewing efficacy
- No posterior contacts on molars
- Abfractions
- Bruxing habits

Treatment objectives

- Osteopathic treatment
- Create posterior support and anterior control and canine control

Treatment plan

1. Functional analyses: clinical and instrumental
2. Determination of correct RP and functional geometry
3. Wax-up
4. Final restorations

Medical treatment
Medicine:
1. Omega-3, vitamin D - 3, vitamin A, Iron, B vitamins, Coenzyme Q10, magnesium,
2. Hormone therapy Androgel.
3. Pulse 46-107, high blood pressure with hypertension 140x90.
4. Last 3 years taking the antidepressant. Ceprolex.
5. Sleep disturbance from 3-5 am. Or an intermittent day from 5-9 am.
6. White coating on the tongue (spleen).
7. Epfort sleepiness scale - 21, the norm is less than 10.

Recommended: Applications for sleep apnea detection.

Sleep Apnea questionnaire.

APPENDIX to medical record Date 24.01.2025 2025

Epworth Sleepiness Scale

How often do you feel sleepy or do you fall asleep in the following situations? Try not to confuse the desire to sleep
with the feeling of tiredness. All situations should be considered in the context of your recent normal lifestyle and
reflect your most typical behavior.

0 - would never fall asleep/doze off
1 - very low probability of falling asleep or dozing off
2 - I'll probably fall asleep or doze off
3 - high probability of falling asleep or dozing off

When I sit and read 0 1 2 3
When I watch TV 0 1 2 3
When I sit and do not perform any active actions 0 1 2 3
in a public place (for example, in a theater, at a meeting): 0 1 2 3
When I ride in a car as a passenger for an hour without stopping 0 1 2 3
When I lie down during the day and relax, if circumstances permit: 0 1 2 3
When I sit and talk to someone 0 1 2 3
When I sit quietly after lunch (without alcohol): 0 1 2 3
In the car, if it stopped for a few minutes 0 1 2 3
21

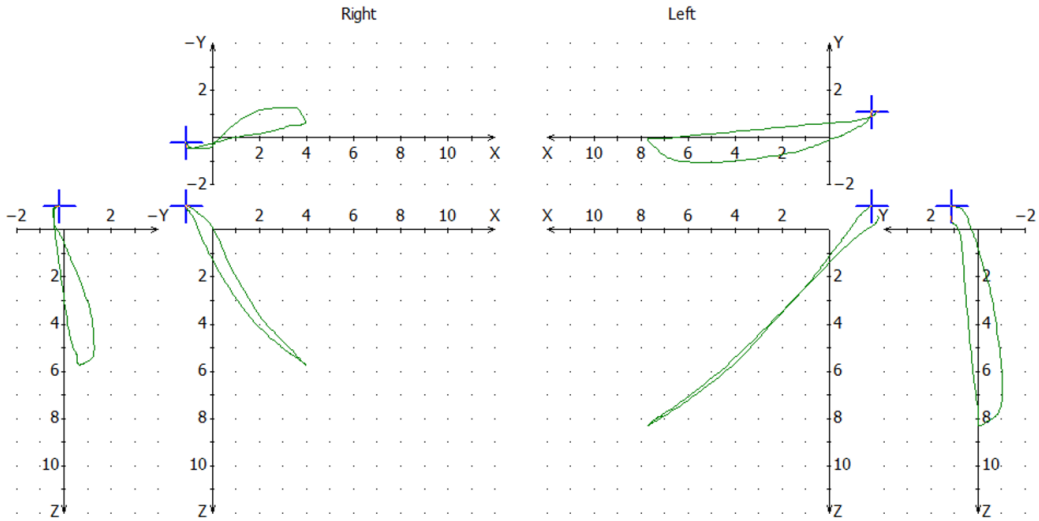
TOTAL AMOUNT:

Note: normal <10

Clinical Instrumental analyses

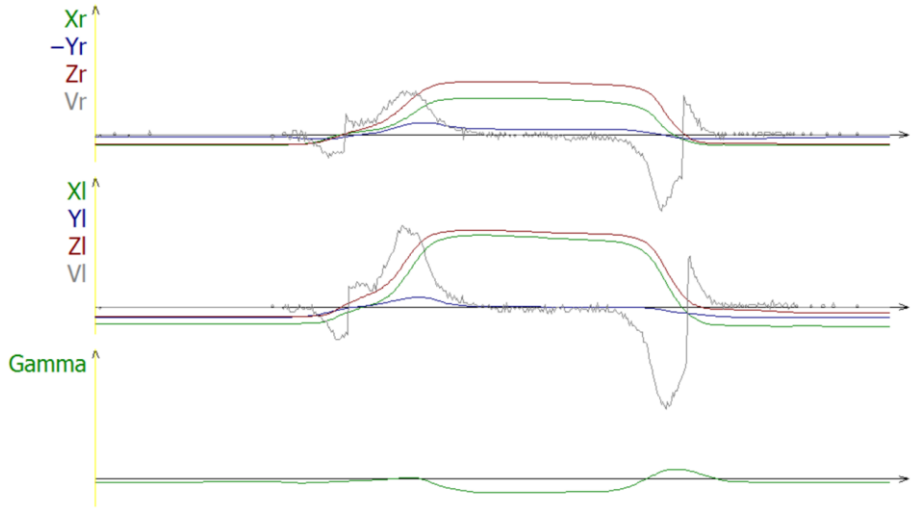
Condylography 29.01.2025

Protrusion – retrusion (from PR to ICP)

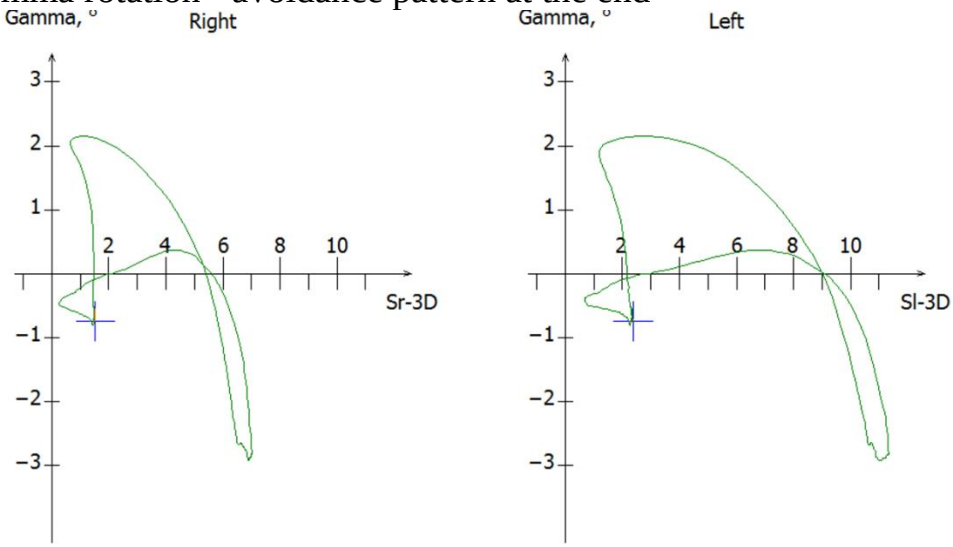


Time Curve Protrusion

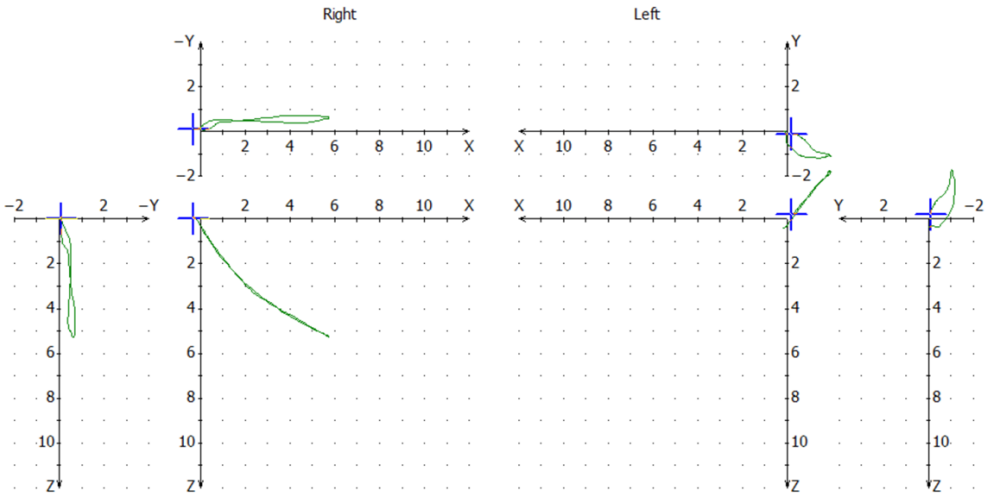
Time curve – ligaments are norm, slightly muscle tension
Positive gamma rotation



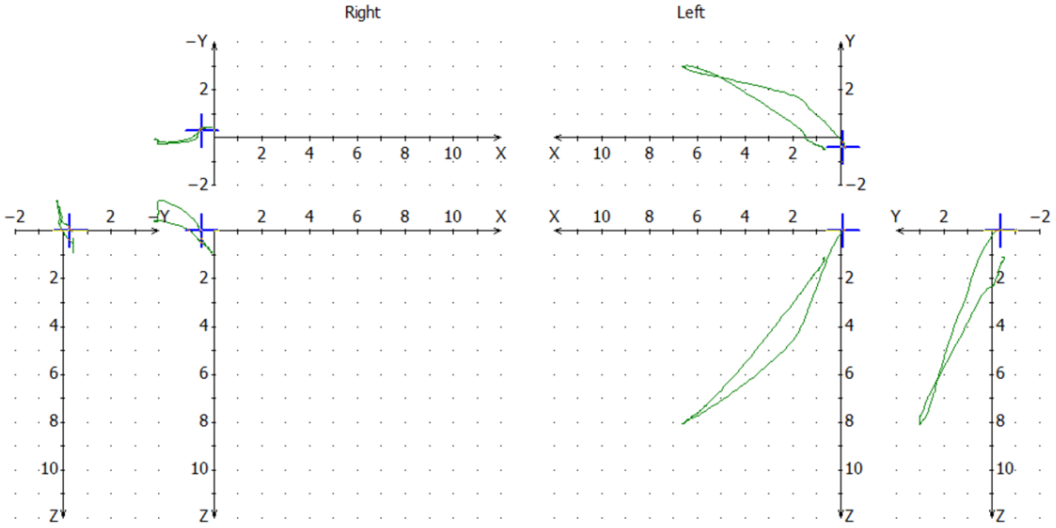
Gamma rotation - avoidance pattern at the end



Mediotrusionright

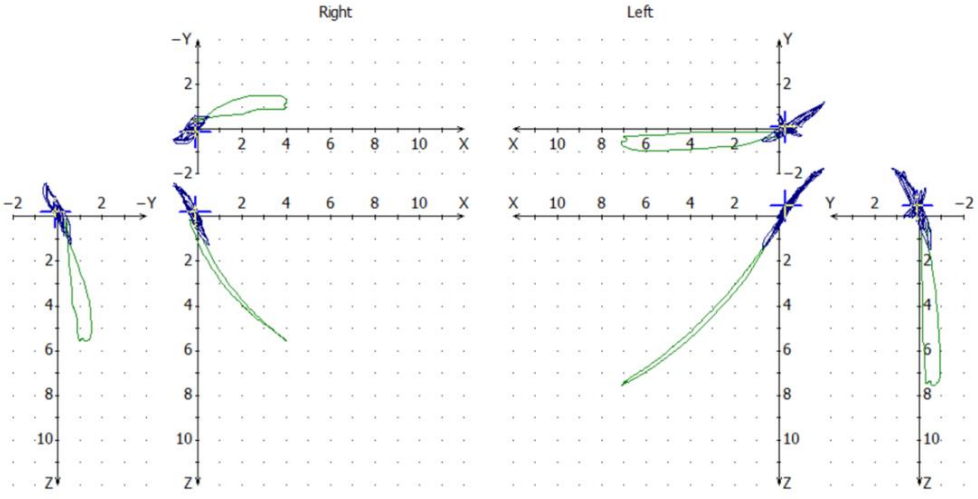


Mediotrusion left



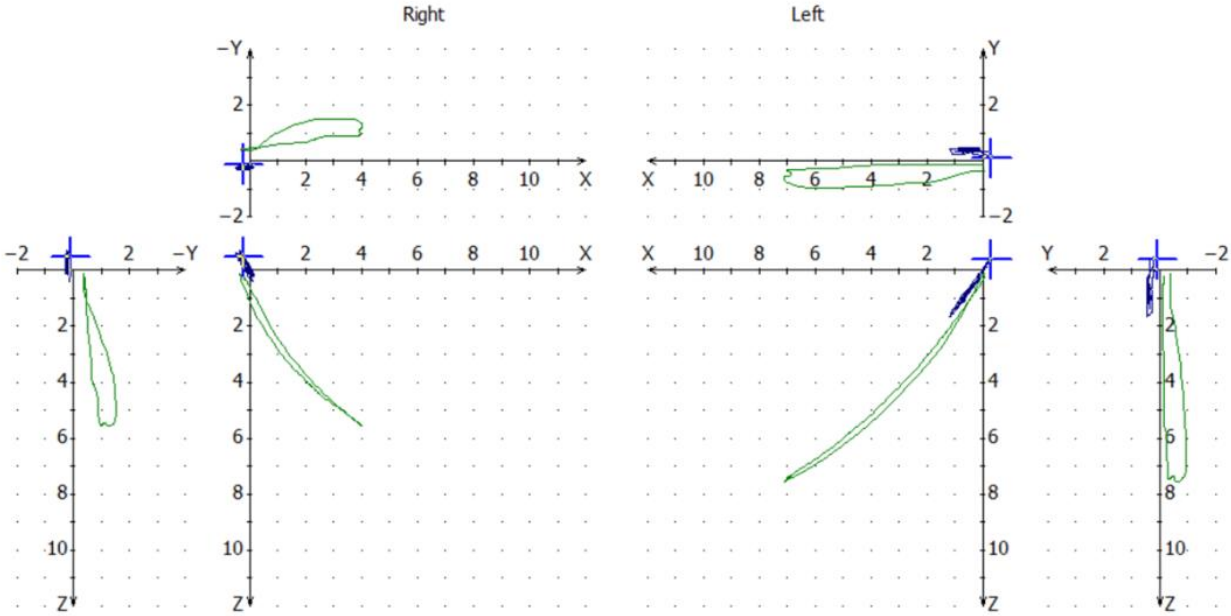
Brux

Bruxing tracing is overlap on protrusion, the condyle is going up and backward

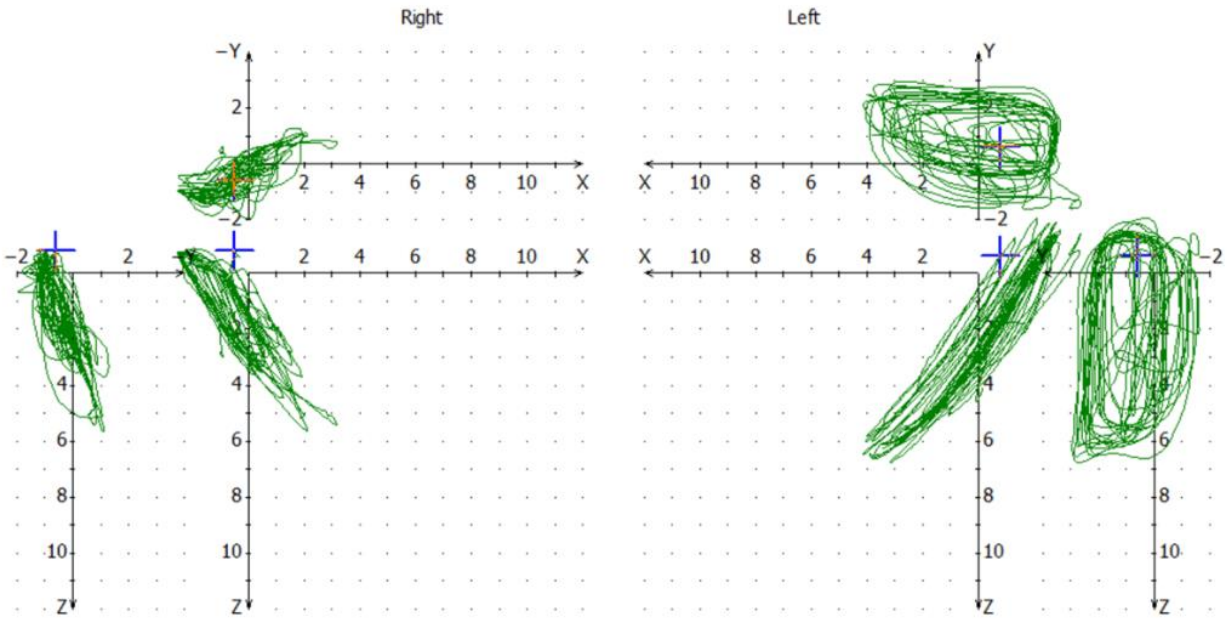


Speech overlap on protrusion

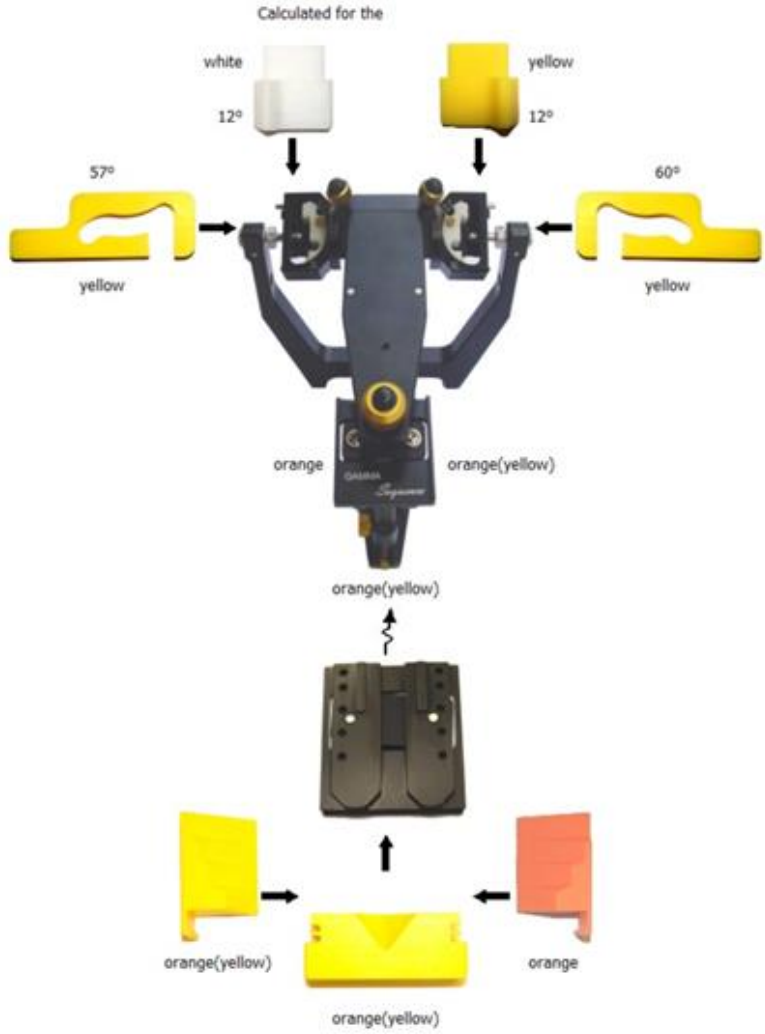
The mandible shifted to the right side during speech



Mastication on the right side : no transversal component, its more protrusive. On the left side full range of movement.

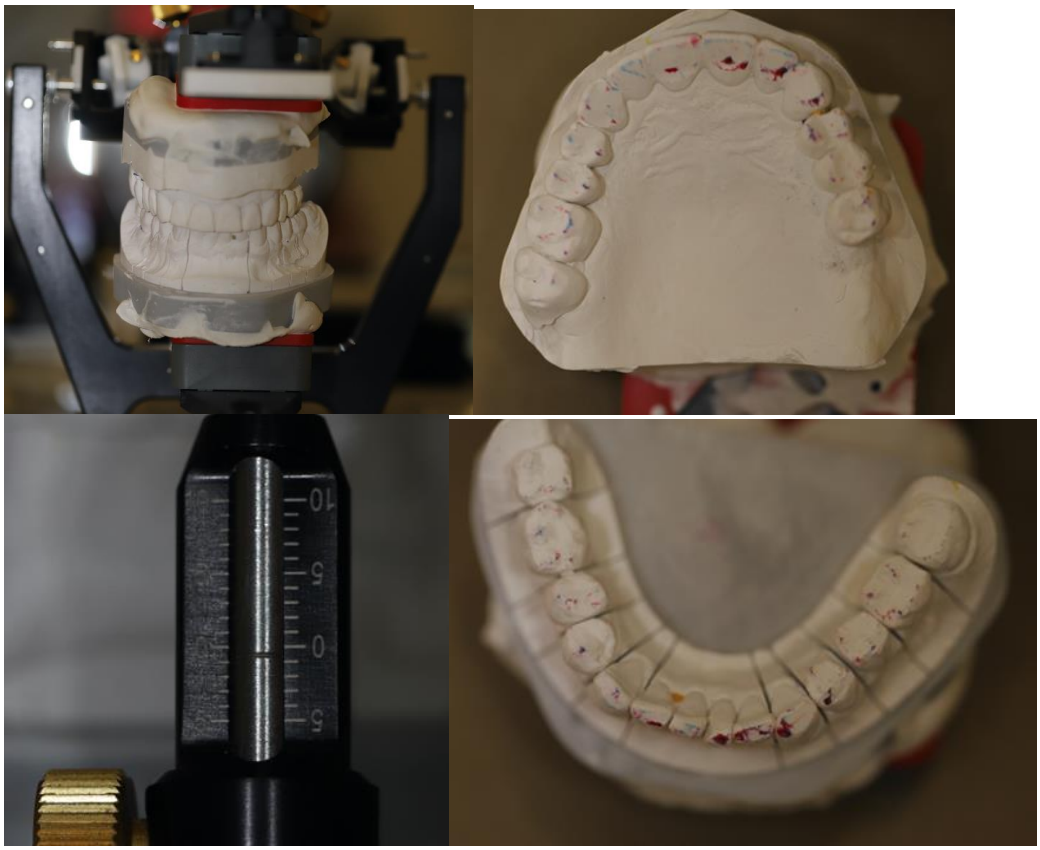


Articulator settings – symmetrical case

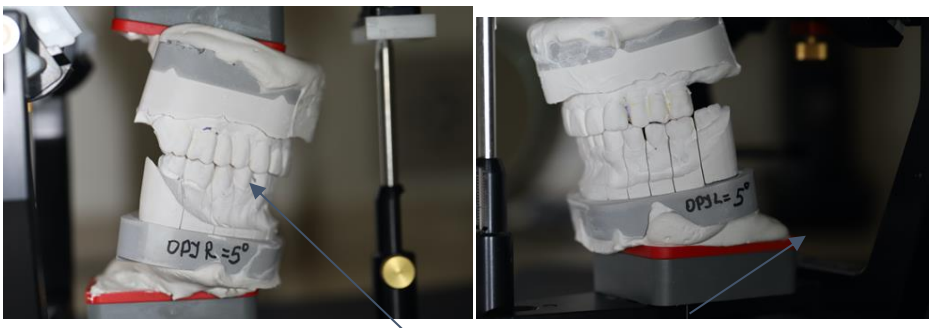


SCI right = 57 degrees =SCI left, yellow insert.
Bennett movement right side 12 degrees, white insert.
Bennett movement right side 12 degrees, yellow insert.
Incisal table – front and right side yellow, left side – orange.
OPI R=OPI L clinical = 5 degrees.
DOA = 57 – 5=52.
52-30= 22.
Low chewing efficacy.
Change OPI both sides to 15 degrees.
57-15= 42.
42-30 = 12 degrees.
Lower facial height norm.
Maxilla is in retral position
DON'T INCREASE VERTICAL DIMENSION!!!!!
Guidance type – GROUP Function!!!
Lithium Disilicate with hardness 450 MPa
Bruxing habit
Anterior guidance 60 degree

Casts mounted in articulator

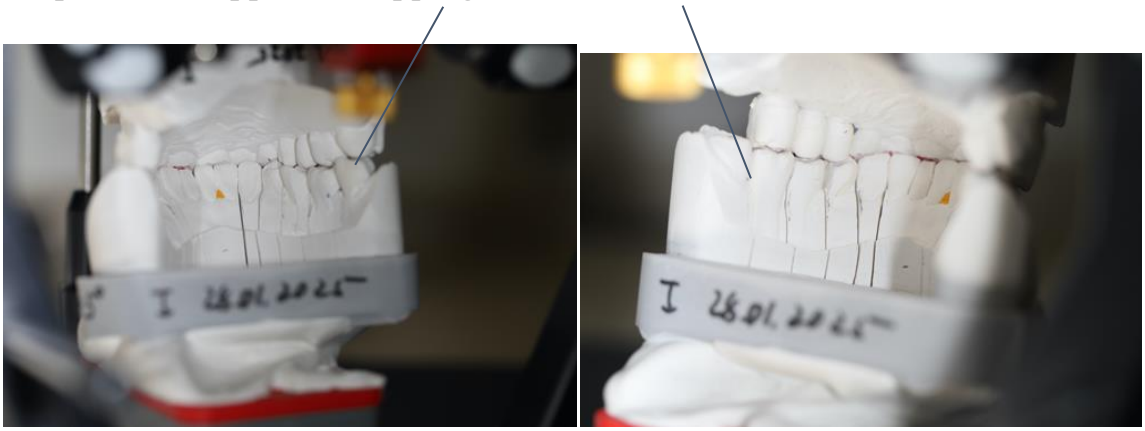


Occlusal plane inclination Symmetrical =5 degrees

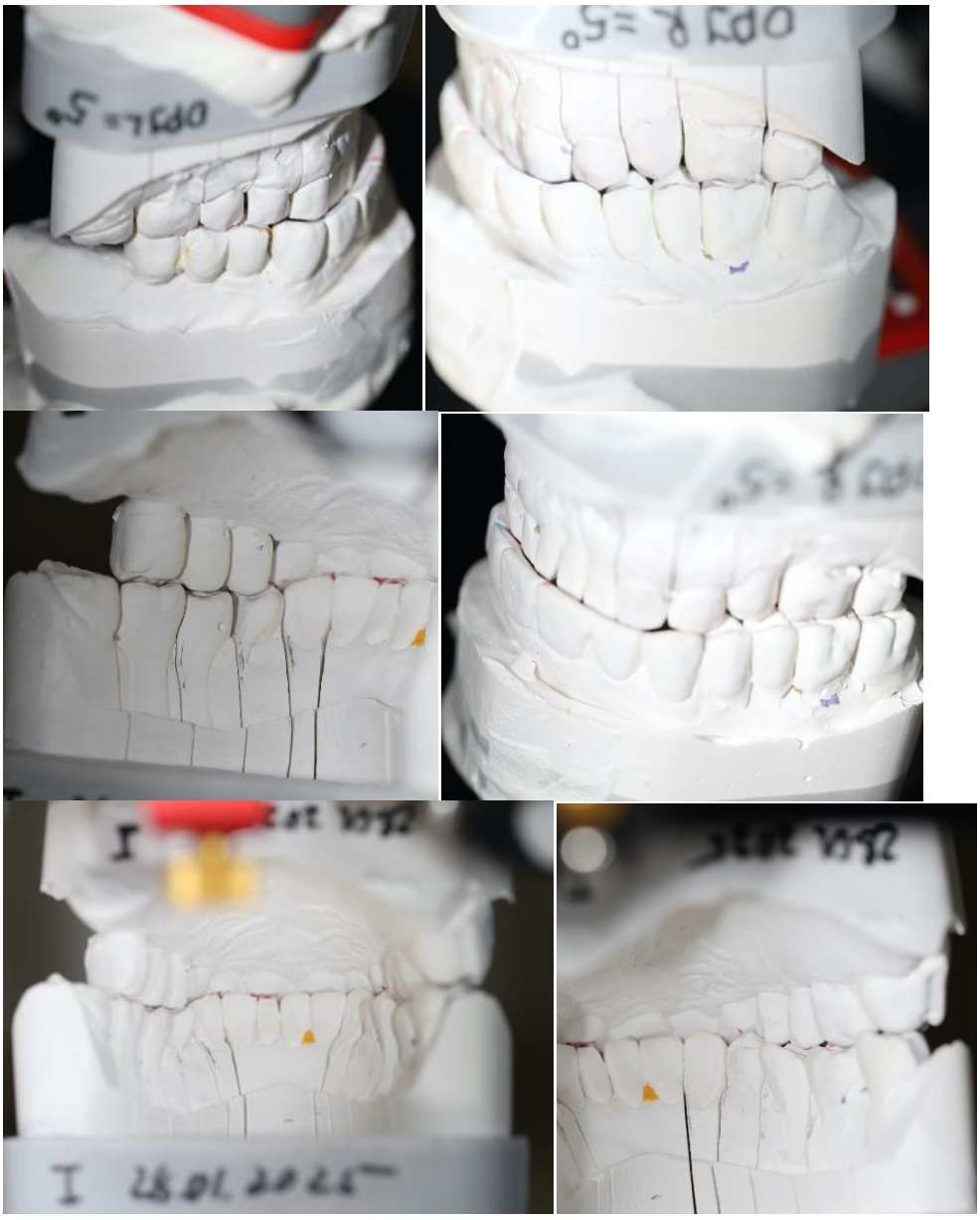


No contacts between natural teeth and implants

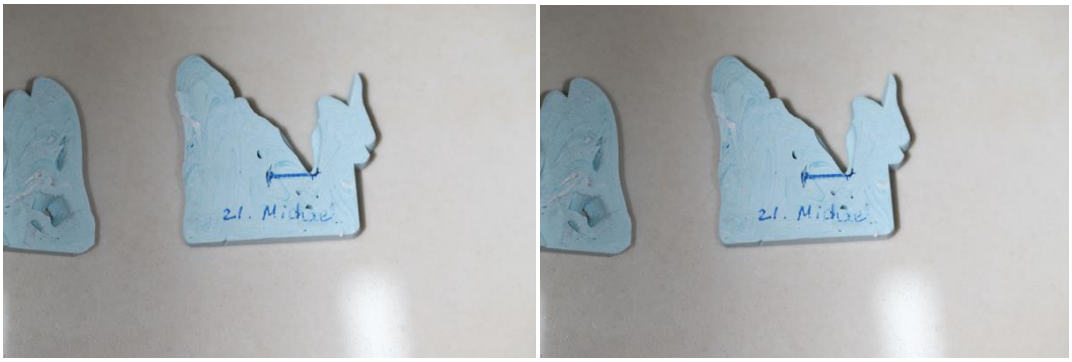
No posterior support / chipping ceramic



Cross bite on the left side



Anterior Guidance 21 and 23



What changed after 13 years of wearing restorations:

- No reciprocal clicks
- No asymmetrical case
- No muscle spasm
- SCI 60 degree. The remodulation of caput mandibula and the shape of sagittal condyle inclination changed. Both condyles now have symmetrical inclination. The patient is now treated as symmetrical case.
- Ligamental click disappeared in left temporomandibular joint.
- Positive Gamma rotation at the beginning, but negative at the end (sign of interference, the mandible closed to full ICP contacts with tension).
- In 2013 occlusal plane was 2-10 degrees. It was asymmetrical case with a click in right TMJ.

Application with esthetic diagnostic (as PDF file)

Check list for initial data collection

Training Checklist / VC – Module B

Name: _____

Condylography

Individual Para-Occluksal Clutch	O
Mount Upper-Lower Condylograph	O
Hinge-Axis Location (manually!)	O
Set-Jp Electronic System and Computer Software	O
Perform Standard Excursive Tracings	O
E-CPM – Records	O
Perform functional Tracings (Speech, Brux, Chewing)	O
Remove Electronics, store recorded data on the computer	O
Mark Reference points on the skin (pen)	O
Remove lower face-bow	O
Mount bite-fork to upper condylograph and remove face-bow	O

Exact Mounting (after condylography!!)

Mount upper model according to exact hinge-axis	O
Mount lower with centric bite record	O

Ceph (after condylography!!)

Stick metal grain onto the Reference marks on the skin	O
Ceph picture	O
Do Ceph Tracing analysed (computerized - CADIAS)	O

Brux-Checker (before mounting!!)

Make upper and lower Brux-Checker. Wear 2 nights (Sat-Sun, Sun-Mon) alternating upper and lower	O

Check list practical work / VC – Module A
(check off each finished item)

Name: _____

Photo documentation

Extra oral	O
Intra oral	O
Models	O

Casts / models

Impression taking	O
Model fabrication	O

Initial diagnostics

Medical analysis	O
Dental history analyis	O
Occlusal index	O
Muscle diagnosis / Palpation	O
Preliminary Brainstem nerve analysis	O
Chronic pain	O
Myofunctional disturbances	O

Reference position

Reference Position (procedure)	O

Face bow / Articulator

Face bow anatomic	O
Maxillary cast mounting in articulator	O
Mandibular mounting in articulator	O

Checklist / VC. Name: M.

- Condylography +
- Individual Para-Occlusal Clutch +.
- Mount Upper-Lower Condylograph +
- Hinge-Axis Location (manually!!) +
- Set-Up Electronic System and Computer Software+
- Perform Standard Excursive Tracings +
- E-CPM – Records+
- Perform functional Tracings (Speech, Brux, Chewing)+
- Remove Electronics, store recorded data on the computer+
- Mark Reference points on the skin (pen) +
- Remove lower face-bow+
- Mount bite-fork to upper condylograph and remove face-bow +
- Exact Mounting (after condylography!) +
- Mount upper model according to exact hinge-axis+
- Mount lower with centric bite record+
- Ceph (after condylography!!) +
- Stick metal grain onto the Reference marks on the skin+
- Ceph picture+
- Do Ceph Tracing analysed (computerized – CADIAS)+
- Brux-Checker (before mounting!!) -
- Make upper and lower Brux-Checker. Wear 2 nights (Sat-Sun, Sun-Mon) alternating upper and lower –

Check list practical work / VC (check off each finished item)

- **Photo documentation**
  Extra oral +
- Intra oral +
- Models +
- **Casts / models**
  Impression taking +
- Model fabrication +
- **Initial diagnostics**
  Medical analysis +
- Dental history analysis+
- Occlusal index +
- Muscle diagnosis / Palpation +
- Preliminary Brainstem nerve analysis+
- Chronic pain +
- Myofunctional disturbances +
- **Reference position**
  Reference Position (procedure+
- **Face bow / Articulator**
  Face bow anatomic+
- Maxillary cast mounting in articulator+
- Mandibular mounting in articulator+

CT – computerized tomography

- Endodontically treated teeth 17,16,13,12,11,21,22,23,31, 34,37,45.

7 6 3 2 1	1 2 3
5	1 4 7

- Implants 15,14, 24,25,26, 36,35,46,47

5 4	5 6
7 6	5 6

Diagnosis

- K00.00 — adentia;
- K00.21 — microdentia;
- F45.8 — bruxing habit;
- K03.0 — grinding
- K03.00 — occlusal
- K03.01 — approximal;
- K03.08 — attrition;
- K03.09 — attrition;
- K04.8 — apex cyst
- Sinus without mucosal thicknesses
- K07.33 — Diastema
- K07.14 — Retrognatia maxilla
- K07.2 — dental arches don’t coincident
- K07.25 —crossbite left side

CT

• Chronic periodontitis: Chronic granulomatous periodontitis.
Rg: The focus of bone destruction is determined with clear contours in the area of the tip of the root 31.
• The condition after endodontic treatment of the tooth is 17,16,13,12,11,21,22,23,31,34,37,45. there are no pathological changes in the periapical tissues.
• The pin-stump tab 17,16,13,12,11,21,22,23,31,34,37,45 is fixed. The channel is corned with X-ray contrast material up to the X-ray tip. The periodontal space is expanded.
• Secondary tooth adentia. In the area of the missing tooth, the bone tissue is differentiated, without focal pathology. The walls of the hole are uneven and clear.

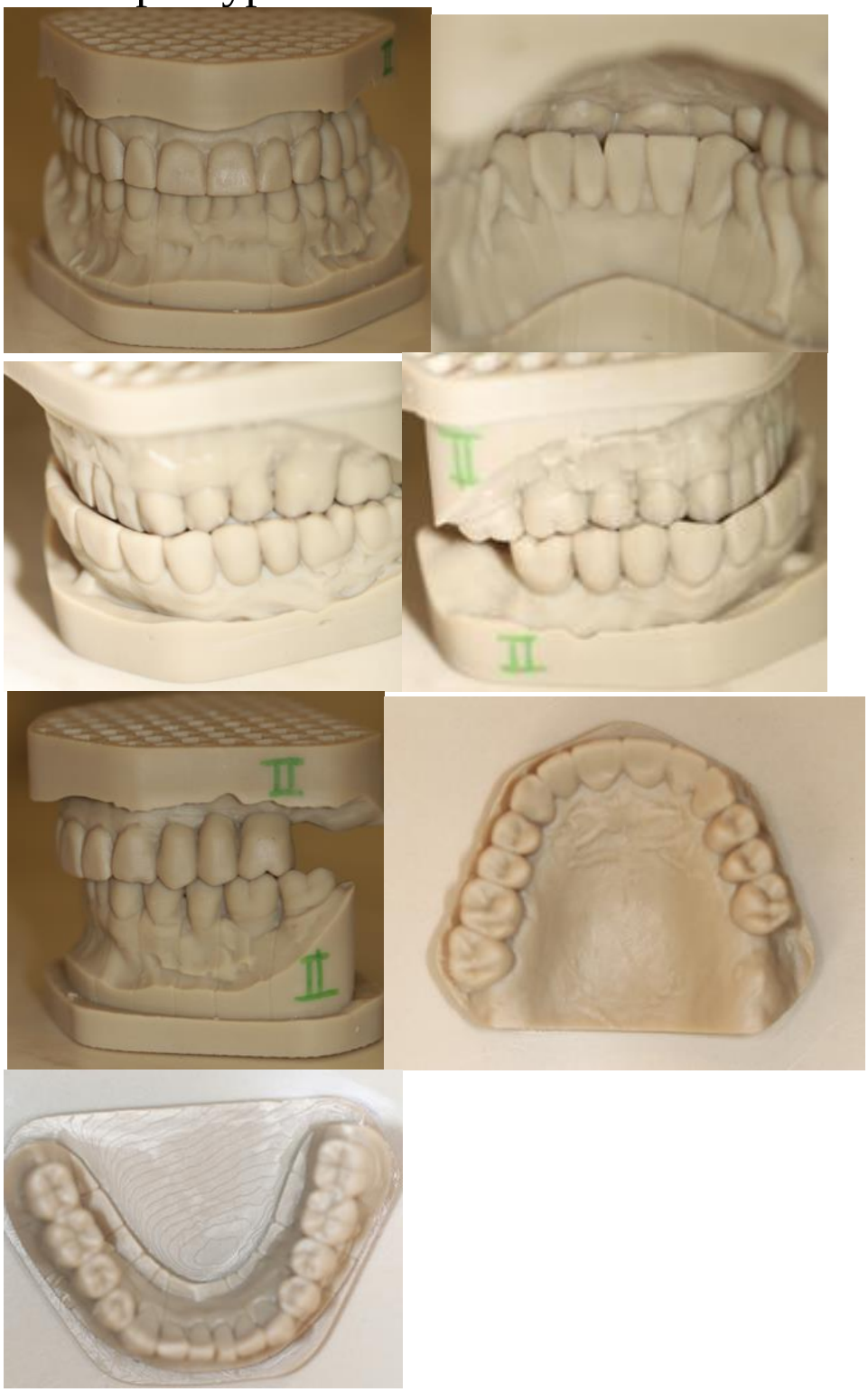
Treatment plan

- Wax-up
- Long time temporaries
- Final restorations

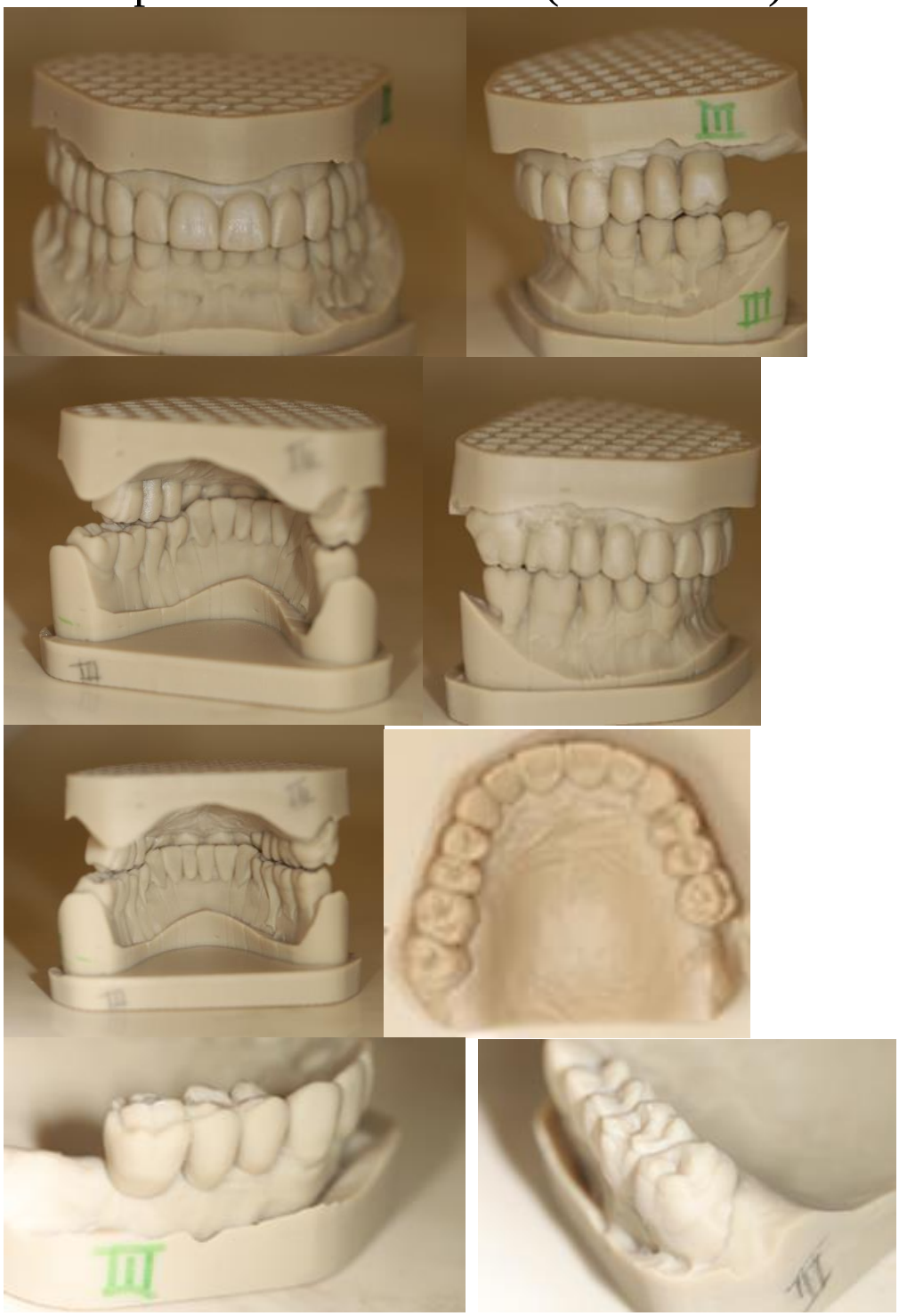
- Apnea determination –and snoring
- Osteopathic treatment (posture)
- Nails problem – diet or vitamins.

Wax-up 1 type - full dental arches

Wax-up 2 type - without 6 frontals



Wax-up 3. Rest of material (to be cuted)



Intraoral picture. April 2025. Final restorations