Dysgnathia as a correlative to an SBS – Lesion?

Do typical SBS lesions cause a recurring pattern of malocclusion and if so, can a therapeutic approach be deducted from this?

Master Thesis zur Erlangung des Grades
Master of Science in Osteopathie

an der **Donau Universität Krems**

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von **Dr. Krenner Eberhard**

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Betreut von **D.O. Nusselein Hanneke** Übersetzt von **Mag. Auer-Specht Sylvia**

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Datum 10.12.2006 Unterschrift: Dr. Krenner Eberhard

Dr. Krenner Eberhard

Dysgnathia as a correlative to an SBS – Lesion?

Abstract:

- **Indices:** Malocclusion, Sphenobasilar Synchondrosis lesions, Influence of SBS lesions to the periphery, i.e. maxilla and mandible, SBS lesion patterns, remote X-ray and X-ray analysis, SBS monitoring, Elastic Open Aktivator.

- **Summary:** For decades SBS lesions and malocclusions have been described in various articles. The objective of this diploma thesis is to find out about possible connections between typical SBS lesions and recurring occlusion patterns.
  For this purpose, ten test persons of a research group who were treated by means of both an Elastic Open Aktivator and osteopathic therapy (exclusively treating the SBS) were compared to nine test person of a control group who were only treated by means of an Elastic Open Aktivator. The measuring methods used were remote X-ray analyses, measurements of SBS amplitudes and frequencies as well as the relationship between the upper and the lower jaw. The evaluation shows that for the persons treated by osteopathic therapy the treatment period to achieve class 1 was significantly shorter than for the control group, while the patients in the control group, in spite of an existing malocclusion, showed a distinctly lower deviation from the norm values in terms of the angular values than the patients of the research group.

Table of contents:

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Diploma thesis topic:

Dysgnathia as a correlative to an SBS – Lesion?

1) Chapter 1:

1.1) Introduction:

- **Do typical SBS lesions cause a recurring pattern of malocclusion and if so, can a therapeutic approach be deducted from this?**

In recent years I have given orthodontic, dental and osteopathic treatment to several hundreds of patients in my dental practice. In this context I kept noticing a connection between

malocclusions, illnesses and posture anomalies. This provided some stimulus to research corresponding literature and information from professors and colleagues so as to better understand any possible recurring patterns and, based on these, to find new therapeutic approaches to this problem.

1.2) Hypothesis:

- Does a combination between functional orthodontic treatment and osteopathic treatment yield more effective results than orthodontic Therapy on its own

- and can these additive osteopathic therapy influence the treatment results

1.3) Why did I choose the SBS as reference for my examinations?

SBS has a representative influence on the movement of the cranial and facial bones involved, and thus on maxilla and mandible. Moreover, the very close connection between these two structures seemed to me to allow for a highly efficient therapeutic intervention in the stomatognathic system.

2) Chapter 2:

2.1) Research of literature and explanations with regard to craniosacral movements, as well as their peripheric effects:

The beginning of an idea, of a new concept or draft is always based on principles and philosophic considerations. They provide the foundations, i.e. the basis for any sort of activity.

In my research activities I found the following lines by A.T. Still, which give an insight in the holistic view of osteopathy? In his large compendium **Still** makes the following statement under **"Principles"[1]:**

- Principles to an Osteopath means a perfect plan and specification to build in form a house, an engine, a man, a world, or anything for an object or purpose. To comprehend this engine of life or man which is so constructed with all conveniences for which it was made, it is necessary to constantly keep the plan and specification before the mind, and in the mind, to such a degree that there is no lack of knowledge of the bearings and uses of all parts. After a complete knowledge of all parts with their forms, sizes and places of attachment which should be so thoroughly grounded in the memory that there would be no doubt of the intent of the builder for the use or purpose of the great and small parts, and why they have a part to perform in the workings of the engine. –

Based on this, I started looking for clues which might be helpful both in diagnosis and therapy and found craniosacral osteopathy to be the optimum approach both from the point of view of a dentist and in terms of osteopathic considerations.

I have found Synchondrosis Sphenobasilaris (called SBS for short) to be the corresponding interface for all motion sequences and representative of all internal and external influences on body and soul.

In this respect **Magoun** states the following in his book **"Osteopathy in the Cranial Field"[2]**

> But it can definitely be said that there is a source of power manifesting in intricate patterns – as motion in the fluctuating cerebrospinal fluid, as motion in the expanding and contracting central nervous system, as motion in the dural membranes, as motion in the articulations of the cranium and as motion of the sacrum between the ilia, slight though it be. It remains, then, to adopt the philosophy that the cranium is a mobile physiological unit, closely integrated with the sacrum and the rest of the body, and subject to the application of the osteopathic concept in relation to lesion production and maintenance, in relation to the physiological effects of lesions, and in relation to their diagnosis and correction.

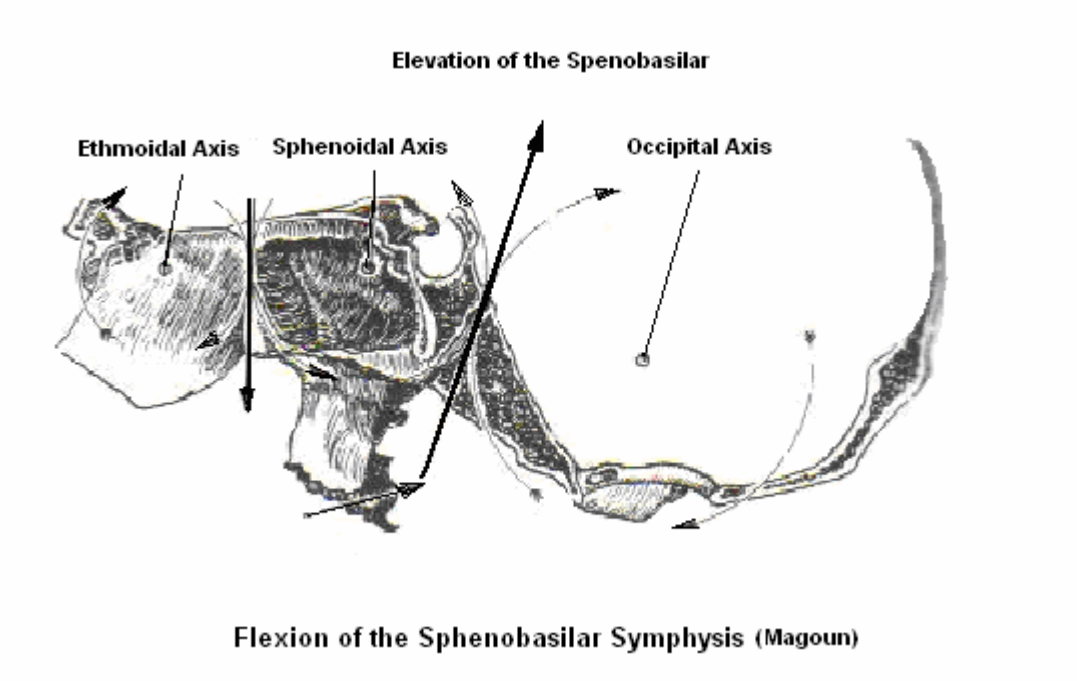
[1] Still A. T. – Das große Still-Kompendium, deutsche Erstausgabe 2002, Seite 176
[2] Magoun – Osteopathy in the Cranial Field –1976 - Page 42

Cranial bone movement as such is then described by the author in great detail.[3]

> Normal functional mobility of any bone or articulation in the cranium occurs within limits determined mainly by three factors. Every bone must have sufficient plastic resiliency in itself and enough mobility in its sutures to move through its normal range without strain. Contiguous bones must be similarly free to accompany such movement or compensate for it without strain. The dural membranes must be unrestricted in their arcs of reciprocal tension to allow such movement within normal limits.

Magoun then explains the SBS flexion and extension movements as well as their influence on the immediately adjacent and more peripheral structures.

2.2) Flexion of the Sphenobasilar Symphysis (Magoun)[4]



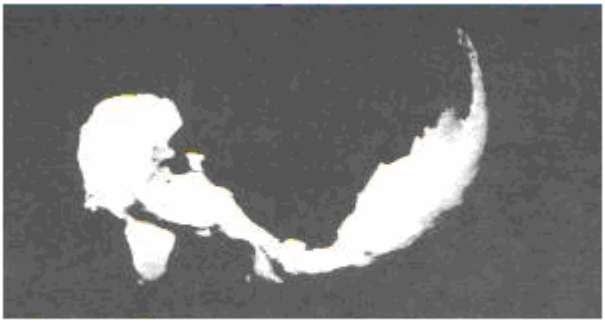
Flexion of the Sphenobasilar Symphysis (Magoun)

> Physiological motion of the osseous components of the cranium occurs as a unit of function with the rest of the primary respiratory mechanism. The midline bones, such as the occiput and sphenoid, are moved about a transverse axis into flexion. This is made possible through the resilience always present in the sphenobasilar symphysis and

[3] Magoun 1976
[4] Magoun 1976 Page 50

results in a slight increase in the inclination of that joint towards the vertex. There is also some variation in the shape and dimensions of the skull. Meanwhile the peripheral bones have responded in a motion sequence like the interdependence in the intermeshed works of a watch. With flexion of the occiput occurs external rotation of the temporals and parietals. With flexion of the sphenoid occurs external rotation of the two sides of the frontal and all the facial bones except the mandible. During the extension phase the reverse takes place. Thus flexion and extension of the sphenobasilar symphysis, to be normal, must be accompanied by a definite pattern of compensatory mechanics.[5]

2.3) SBS–movements[6]



SBS in Neutralposition (Magoun)

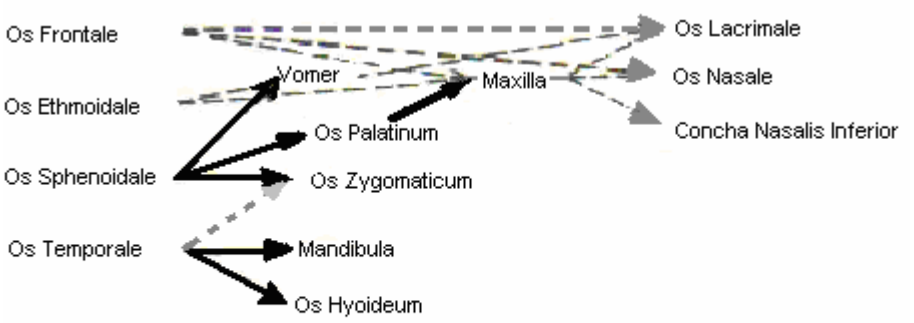
SBS in Flexion (Magoun)

[5] Magoun 1976
[6] Magoun 1976 Page 51

SBS in Extension (Magoun)

The sphenobasilar is shown in the neutral position, in the flexion position which is an increase in the natural cephalad convexity, and in the extension position. The position of the two components as shown by the arrows is somewhat exaggerated in all of these illustrations, for better understanding.

The movement of the facial group depends on combinations of influences best explained with a diagram.[7]



Note: Solid line denotes main factor in motion; broken line partial factor only!

The following description of what happens throughout the craniosacral mechanism is confined to that which occurs only in flexion of the sphenobasilar. It should be understood that the reverse would be true physiologically in extension. And the motion is minute.

[7] Magoun 1976 Page 52

2.4) Connection between SBS movements and upper and lower jaw:

The connection between SBS movements and maxilla and mandible is described by **Magoun** as follows:[8]

1) Upper jaw, indicating the position of the maxillae. With external rotation of the maxillae, the upper incisors move slightly posteriorly and tend to separate inferiorly, while the rest of the upper teeth tend to slope more laterally as the alveolar process flares.(Bilaterally or unilaterally.) With internal rotation the reverse occurs. In torsion or sidebending rotation there will be a combination of the two positions appropriate to the externally and internally rotated maxillae.
Intraosseous lesions between the premaxillae and the maxillae proper tend to produce unphysiological exaggeration. An example would be the broad, low palatine arch of the externally rotated maxillae proper, together with the protrusion or “buck teeth” due to internal rotation of the premaxillae.
2) Lower jaw, indicating the position of the temporals. Bilateral external rotation of the temporals will tend to cause retrusion of the lower jaw because both mandibular fossae have moved posteromedially. Bilateral internal rotation will tend to cause protrusion. With one temporal in external rotation and one in internal, the lower midincisal interval will not coincide with the upper, having been shifted to the side of the posteromedial mandibular fossa or externally rotated temporal.

Physiological motion of the maxilla:[9]

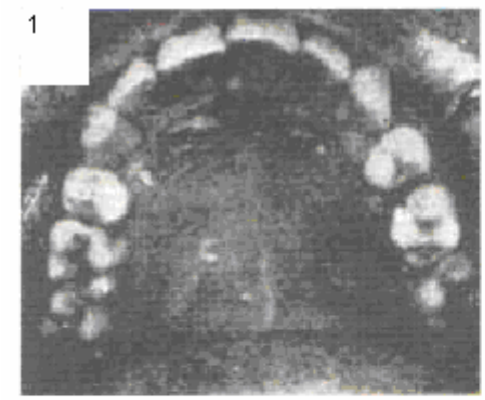
In external rotation, synchronous with sphenobasilar flexion, the maxillae move as though suspended from the frontal processes. The posterior border of the tuberosities moves posterolaterally to slightly widen the alveolar arch and flare the upper teeth a trifle. The intermaxillary suture lowers and moves posteriorly. The posterior border of the frontal process moves towards a more coronal plane. The zygomatic process moves anterolaterally.

[8] Magoun 1976
[9] Magoun 1976

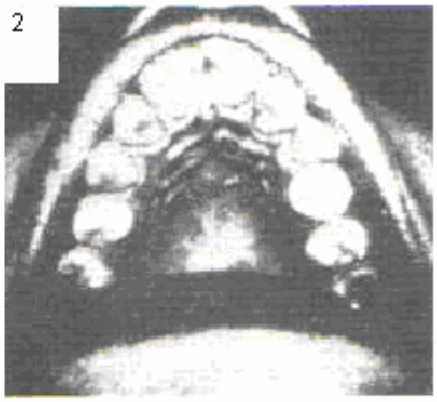
The lesion mechanisms, with consecutive cranial and facial anomalies and thus malocclusions are split up into the following categories by **Magoun**:[10]

1) **Primary or developmental**
2) **Secondary to the position of the sphenoid**
3) **Traumatic**

2.5) Pictures of hard palate with different lesion patterns[11]



1 - **Broad and low indicating external rotation of the maxillae. This is also the best indication of flexion of the sphenobasilar from the standpoint of observation .**



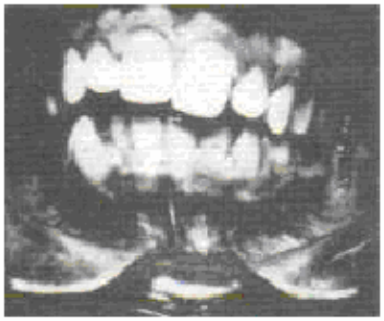
2 - **High arched indicating internal rotation of the maxillae and crowding of the nasal fossae, a possible bent sepum and extension of the sphenobasilar.**

[10] Magoun 1976
[11] Magoun 1976

2.6) Skull deformation based on a SBS lesion[12]

Extension Type Head responsible for facial abnormalities (Magoun)

Internal rotation of the temporals adds to the mandibular protrusion. Retrusion of the maxillae and nasal area often accompanies such a long narrow head. The malocclusion is not primarily dental but rather structural and develop - mental.



A marked case of malocclusion. (Magoun)

The mandible is apparently too narrow for the lowers to grow in their proper position. The lower midincisal line is to the right indicating external rotation of the right temporal. The right maxilla is apparently in external rotation with a relatively horizontal palatine process while the left maxilla seems to be in internal rotation with arching of the palatine process and inward inclination of the alveolar process.

[12] Magoun 1976 Page 192

A further clear reference to the connection between intraosseous lesions and malocclusions are described by **Magoun** in his book "Osteopathy in the cranial field".[13]

> **Intraosseous Lesions:** Prenatal lesions may occur between the premaxilla or incisal portion and the maxilla proper, the demarcation line running between the incisors and the canines. The commonest type involves the protruding incisors or “buck” teeth of the internally rotated premaxillae, often accompanied by the wide, low palatine arch of the externally rotated maxillae proper.

Further possible lesion mechanisms in the mandible are explained by **Magoun** a few pages down[14] when he says:

> The mandible is the only facial bone not dependent upon the position or movement of the sphenoid. In this case it is a question of the temporals and occiput. Primary or developmental lesions may result from abnormal positioning in this area. With flexion of the sphenobasilar and external rotation of the temporals, the mandibular fossae on both sides will move posteromedially, inviting a posterior position of the mandible or mandibular retraction. Mandibular protrusion, at the other extreme, can result from internally rotated temporals with their anterolateral fossae. Excessive perinatal molding of the entire cranium producing the narrowed facial area and excessive internal rotation of the temporals is the commonest lesion.
>
> Trauma, such as a glancing blow on the jaw, is the usual cause for the pathology in which one temporal is rotated externally and one internally. It results in shifting of the mandible anteriorly on one side and posteriorly on the other with definite malocclusion.
>
> ***This possible mobility of the mandibular fossae is of greatest significance to the practice of dentistry and should be more widely recognized***.

[13] Magoun 1976
[14] Magoun 1976

> Should the blow be directly on the point of the chin both temporals will tend to rotate internally? Minor subluxations of one side usually explain the phenomenon of a "***clicking***" or "***popping***" jaw.

Perinatal influences, however, can also influence facial and maxilla/mandible development.[15]

> Much might be said about traumatic perinatal influences. No doubt thumb-sucking molds the palate superiorly. Should the arch be sufficiently narrowed, there is not enough room for the tongue which must be protruded, so the babe becomes a mouth-breather. Sphenobasilar and temporal lesions, either perinatally or later on, can interfere with normal muscle action and circulation. This is because of attachment to the pterygoid processes or subjacent to the mandible which is influenced by the position of the temporal. The maxillae and mandible decrease in size with the loss of the teeth and absorption of the alveolar processes so that the vertical diameter of the face is lessened.

Sutherland refers to **SBS** as follows:[16]

> While it is the membranous part that is strained, the total effect is manifested by the relations between the bones. Various types of lesions or strains are found in the cranium in clinical practice. The common findings are those at the sphenobasilar junction together with the implications for all the articulations in the total mechanism.

A few lines further down the author states the following: [17]

> When properly understood, the mechanism is the key to simple reduction of cranial membranous articular strains.

[15] Magoun 1976
[16] Sutherland 1990
[17] Sutherland 1990

Another source, is **Anthony D. Capobianco**,[18], who stressed the importance of SBS by writing the following:

> One of the most influential structures readily accessible to examination and treatment is the sphenobasilar synchondrosis (SBS)."

On page 12 of the same letter the following quotation can be found under the title "Flexion Lesions":

> - Dentally, as a result of the "low, wide palatine arch with tendency for the alveolar processes to flare laterally," the flexion lesioned SBS could be seen as a possible cause for malocclusion.[19]-

Even clearer reference to the SBS including the bones connected to it and their interactions in terms of malocclusions can be found in an article by **Mark and Cherry Harris[20];**

Here a reference to a class II malocclusion is made:

> The narrow maxillary arch entraps the mandible and forces it into a retrusive position, resulting in a forward head tilt and loss of cervical lordosis. Orthodox treatment in this overcrowding situation would be to extract maxillary bicuspids or mandibular bicuspids or both, followed by fixed appliances on the upper and lower arches to pull everything back in line. As a result of the 4 bicuspid or 2 bicuspid extraction and the fixed appliances on the maxilla and the mandible the following results occur. By inhibiting the movement of the maxillae further development of the premaxillary area is negated as well as the normal free movement of the vomer and its relationship with the SBS and the ethmoid bone. Retrusion of the mandible leads to a loss of vertical between the condyle and the mandibular fossa, irritating the retrodiscal tissue and activating the proprioceptive fibres, which produces a temporalis muscle spasm.

[18] Capobianco 2003
[19] Capobianco 2003
[20] Mark and Cherry Harris 2002

> The close proximity of the head of the condyle in the fossa affects the Eustachian tube, the tympanic membrane and the whole vestibular system. The trigeminal nerve and the facial nerve can also be affected by the retrusive mandible creating a neurological deficit to both these mixed nerves. Bracing can fix one maxilla in flexion and one maxilla in extension - distorting the cranial dura and impeding CSF flow……

A few lines further down the authors make the following remark[21]

> It is as well to note that the ascending/descending strain patterns present within any one individual are clinical indicators that change with osteopathic intervention. This applies particularly with premature contacts, mandibular deviation, incisal interferences and loss of vertical, all of which can be changed when muscles of mastication are neurologically balanced and the five phenomena are considered and homeostasis within the body sought."

A slightly different aspect of SBS can be found in an article by **Nicholas Handoll** who makes a more detailed remark on this joint:[22]

> The SBS is designed to be a point of stability, of stillness around which movement can take place, like a keel, but it will deform sufficiently to absorb forces of distortion. It is designed to be stable but to accept the deformation of the PRM. As with the frontal bone however, the degree of motion required in the adult SBS has reduced to such an extent that it can be accommodated by the whippiness of the bone alone, so the original synchondrosis ossifies.
>
> So the SBS is designed to accept the stress distortion of the PRM, but even that is not the essential point. The essential point is that clinically it ***feels*** as though the SBS moves. The motion of the PRM does not come ***from*** the SBS. The motion is generated elsewhere.

[21] Mark and Cherry Harris 2002
[22] Nicholas Handoll –Anatomy of Potency – Osteop. Suppl. 2001, Page 22

> However, the SBS, as the fulcrum of the motion of the cranial bones, is the point to which the motion of the bones of the cranium is referred. Hence, to palpation, the overall motion of the whole of the bony cranium feels to be relating itself to its fulcrum point at the SBS.
>
> It actually feels to the palpating hand as though the SBS is rising in flexion and falling in extension. Whether it is measurably rising or falling is clinically immaterial. What is important is that the sum total of all the motion changes of the cranium coming to the palpating physician's hands is perceived by the palpating physician as an organized pattern of motion with its fulcrum at the SBS. The SBS is conceptual focus of all the energies affecting the cranial bones in their combined expression of the PRM.

and a few lines further down:[23]

> In summary therefore, in my view the SBS is designed ***not*** to move, but is a fulcrum point of functional stability around with the cranial bones express the motion of primary respiration.

However, Mr. **Handoll** makes a further, even more important remark, with regard to SBS lesion patters[24]

> It is rare to find a patient with only one pattern. Most patients have their own unique mixture of each pattern in varying degrees. Patterns are named according to the direction into which the mechanism distorts most easily, taking the path of least resistance.
>
> In other words, the mechanical configuration in which that individual prefers to function will tend toward the direction of that pattern – toward the ease. It must not be forgotten, that in whichever pattern an individual is functioning, the PRM is continuously expressing

[23] Handoll 2001
[24] Handoll 2001

primary respiration, while its exact expression is modified by the pattern. Patterns are most commonly described as distortions of the bones of the head.

Kimbrough, Jr. provides for a slightly different osteopathic approach to malocclusions in an article with the title "Snap, Crackle and Pop in the Dental/Cranial Realm".[25]

This crossbite condition “locks the maxillae“ into a restriction motion, and there is considerable difference in cranial rhythm and vitality when the teeth are occluded and when they are apart. Dr. Jim Jealous in his embryology lectures with the WGST Dental Group in 1998, 2000 and 2001 discussed the midface-cerebellar hemispheres relationship and the same rapid growth factor of each area, “Cheek to cheek in front as is cheek to cheek in back in the cerebellum.” We have taken measurements through the years and found that this approach of relating the anterior of the face to the posterior cranial fossa is most accurate. In crossbite situations this inadequacy of the maxilla or the maxillae can be noted with a similar diameter depression in the cerebellar hemispheres by measuring the occipital-mastoid suture laterally. If there is a unilateral posterior crossbite, only the side of the crossbite will be so affected posteriorly in the occipital-mastoid suture on that side. Unfortunately this unilateral difference is felt in palpation more than it has been measured. There also seems to be a correlation of overbite and anterior crossbite on the shape of the occiput posteriorly as it relates to C2 but that is a subject of another paper.

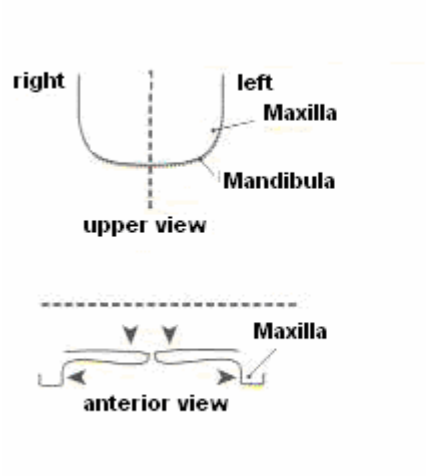
In his book, **Liem** shows a schematic diagram, which hints at a close connection between SBS dysfunctions and occlusion problems.

[25] Kimbrough Jr. 2002

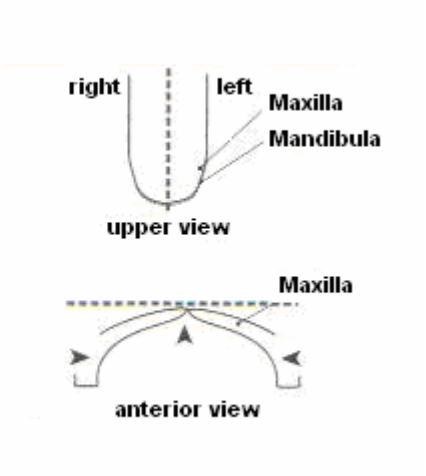
3) Chapter 3:

3.1) Graphic display of SBS lesions and their possible effects on maxilla and mandible:[26]

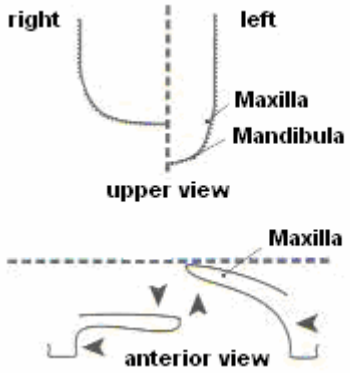
a) Flexion of the SBS



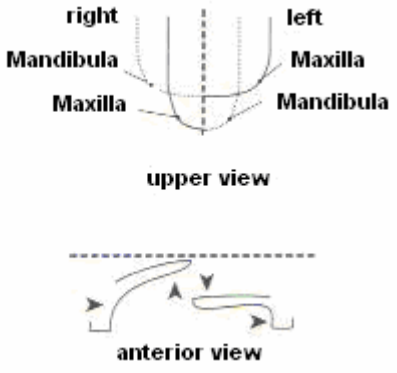
b) Extension of the SBS



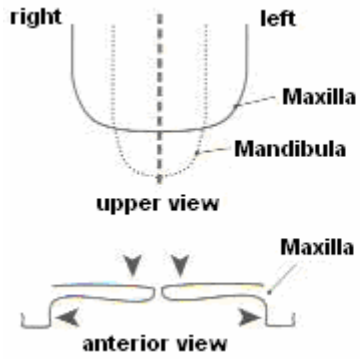
c) Torsion of the SBS



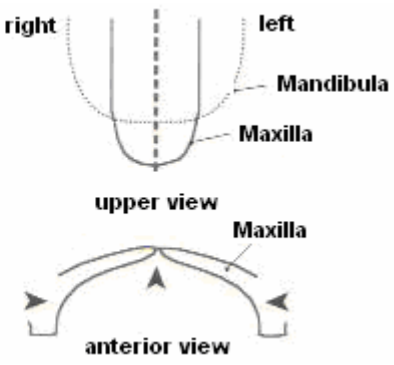
d) Sidebending –Rotation Right



e) Superior Vertical Strain



f) Inferior Vertical Strain



[26] Liem 2000 Seite 305

The diagrams stated before show the outlines of Maxilla and Mandibula, in the view from above, those the Maxilla alone in the opinion from the front. The heads of the arrow visible in the frontal level point the way of the direction of motion, which the bones involved under the influence of the respective SSB lesion take. The broken line represents the centre line in the supervision on the one hand, in the opinion from the front however a boundary line in the course of motion of the extension movement.

4) Chapter 4:

4.1) Short description of cranial dysfunctions:[27] [28] [29]

„Flexion Dysfunction“

As soon as the sphenobasilar joint extends beyond the normal range of motion towards a flexion, this is called flexion lesion. There is, however, a certain restriction of the motion in extension direction.

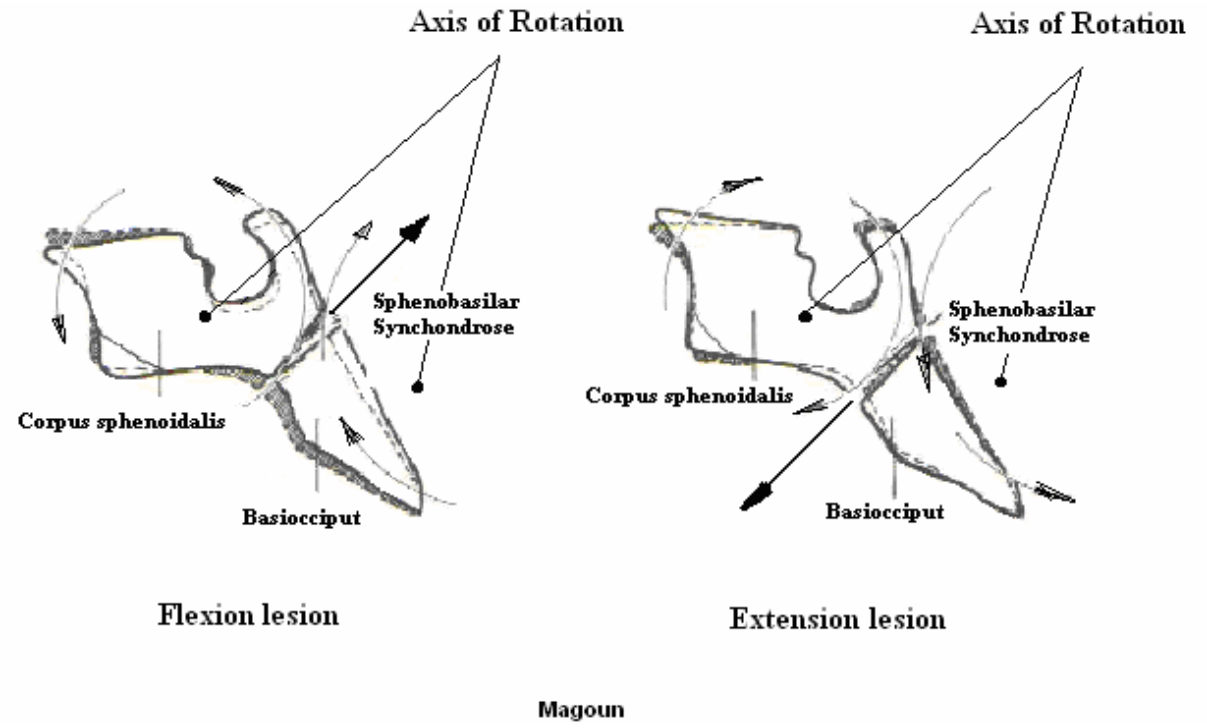
„Extension Dysfunction“

This is the opposite of the phenomenon described above, i.e. there is an excessively strong motion in extension direction.

Axis of movement:

The transversal **rotational axes** in the sphenoid bone are located slightly below the sella turcica in the corpus sphenoidale and in the occiput roughly at the height of the processus jugularis, above the foramen magnum.

[27] Magoun 1976
[28] Das große Sutherland-Kompendium 2004
[29] Liem 1998

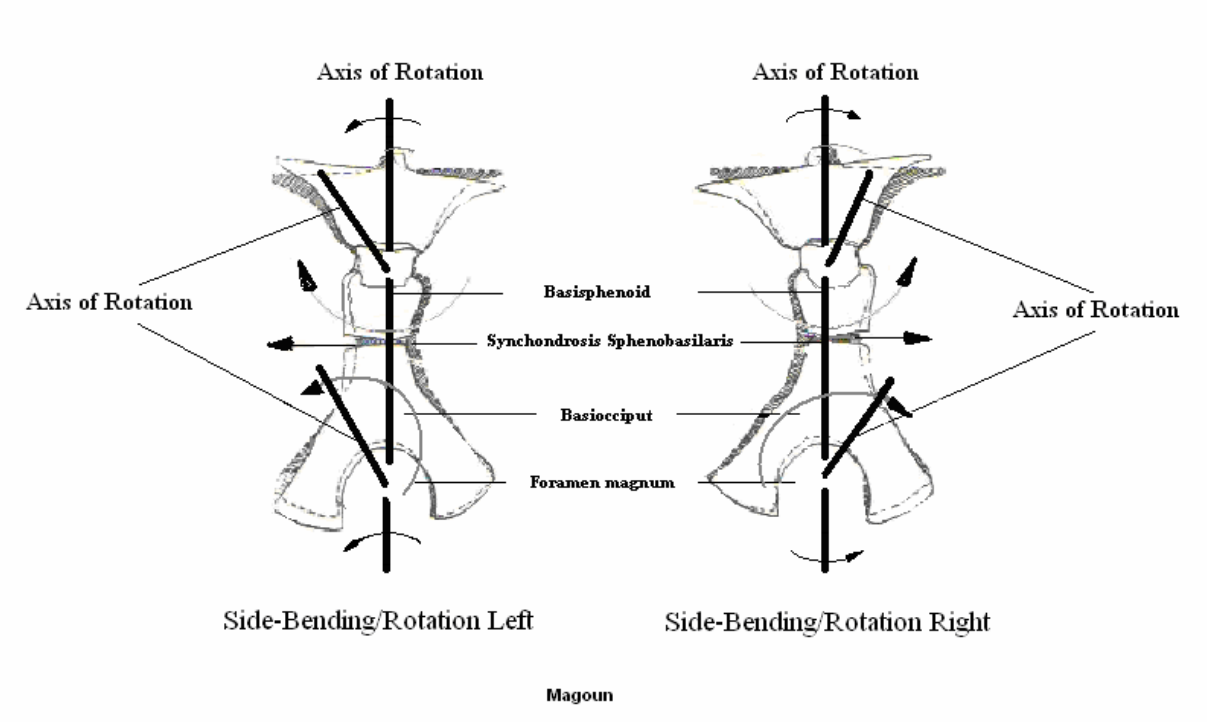


„Side-Bending/Rotation Dysfunction“

Both the os occipitale and the os sphenoidale move upwards on one side around an axis which is oriented towards the anterior-posterior, while on the opposite side both bones make a downward movement, with both bones moving towards each other on the higher side and away from each other on the lower side, i.e. this pattern can be described from two sides. By definition, reference is always made to the lower side, i.e. the location where both bones move away from each other.

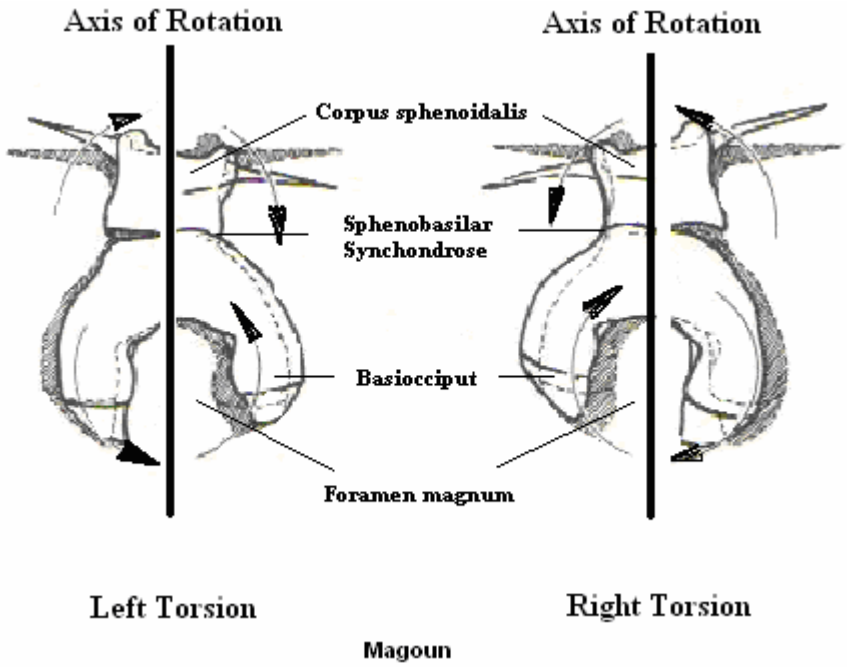
Axis of movement:

The lateral flexion (side-bending) is a motion around two vertical axes on the one hand, with one leading right through the centre of the sella turcica and the other centrically through the foramen magnum, and an additional rotation around an anterior-posterior axis through the centre of the SBS.



„Torsion Dysfunction“

This is a torsion at the SBS around an anterior-posterior axis, i.e. the os occipitale rotates to one side, while the os sphenoidale rotates in the opposite direction. There are two types of lesions, with classification being according to the higher ala major of the sphenoid.



Axis of movement:

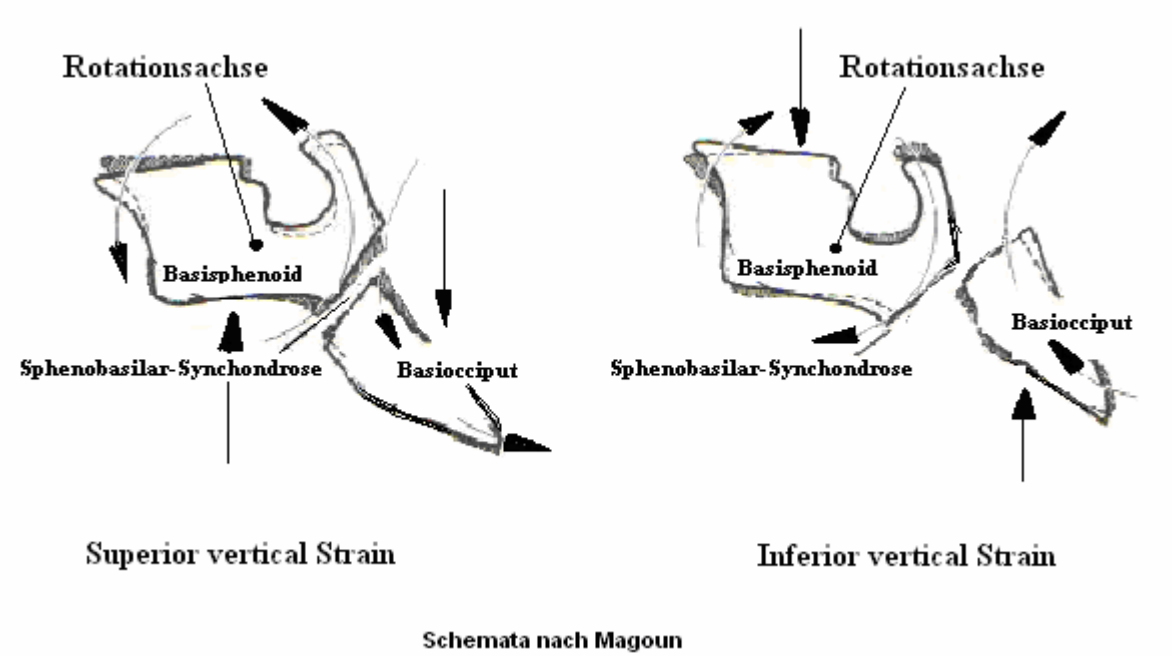
There is an anterior-posterior axis running through the centre of the SBS. The direction of the axis is from anterior-posterior (nasion) to posterior-inferior (opisthion).

„Superior Vertical Strain“

This pattern shows two transversal axes, with one leading through the corpus of the os sphenoidale in front of the sella turcica, and the other at the occiput above the foramen magnum at about the height of the processus jugularis. The dysfunction is categorized according to the cranial orientation of the basis of the os sphenoidale.

„Inferior Vertical Strain“

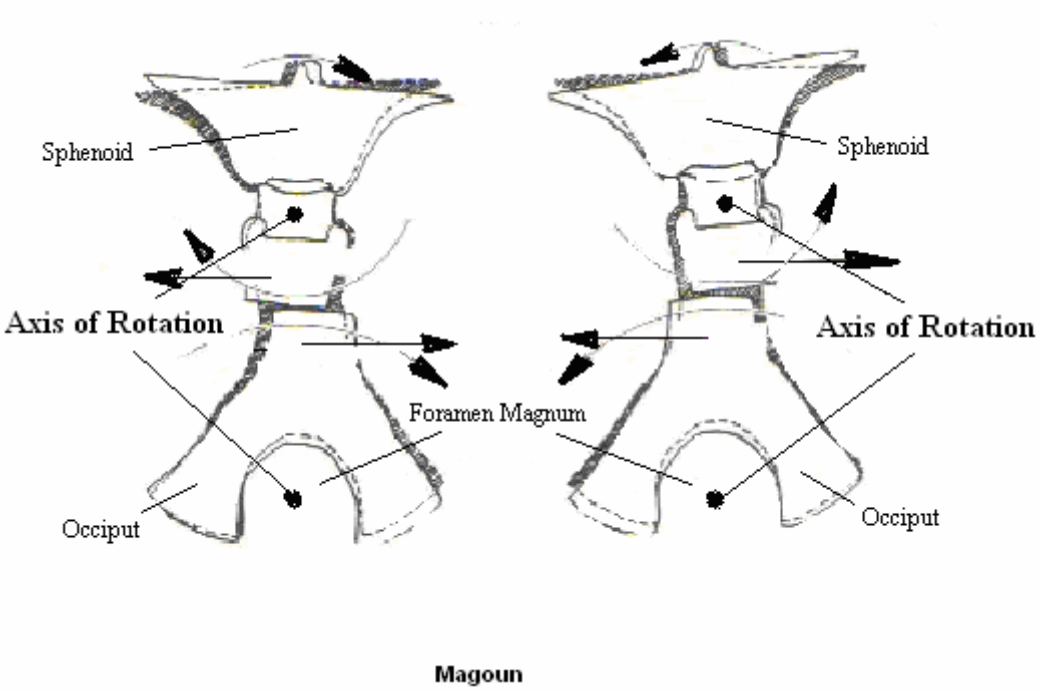
This pattern too shows two transversal axes corresponding to the ones described earlier, i.e. one that runs through the corpus of the os sphenoidale and one at the height of the processus jugularis. The dysfunction is defined according to the caudal orientation of the basis of the os sphenoidale.



Schemata nach Magoun

“Lateral Strain”

A "Lateral Strain" dysfunction is described by a rotation of the os sphenoidale and the os occipitale around two hypothetical vertical axes, with the centre of the rotation of the os sphenoidale being the sella turcica and that of the os occipitale being the foramen magnum. Both bones experience a likewise rotation around their axes, with the dysfunction being defined as that side being subject to lesion, which the basis of the os sphenoidale has moved to.



Magoun

Lateral Strain:

Top view: The sphenobasilar synchondrosis suffered some strain or was shifted before its ossification. Dysfunction of the lateral strain can be imagined as a movement of os sphenoidale and os occipitale around two hypothetical vertical axes. One axis is going through the sella turcica, the other through the foramen magnum. When very strong traumatic forces are applied laterally to the large wing of the os sphenoidale, the SBS does not rotate around two vertical axes but the os sphenoidale is shifted laterally relative to the joint surface to the os occipitale.

„Compression Dysfunction “

The rear side of the os sphenoidale and the bars basilaris of the occiput are compressed, resulting in a more or less strong limitation of the flexion and extension movement around the SBS.

„Intraosseous Lesions “

In particular of the elements before and during birth
Some of these are prenatal impairments, such as a shift between the pre sphenoid and the post sphenoid, or birth traumas involving the four flat cartilaginous portions of the os occipitale and the six of the os temporales. In addition to this, a great number of other lesion patterns are also possible.

5) Chapter 5:

5.1) Quality of Craniosacral Movement

Craniosacral Rhythm:[30]

The craniosacral rhythm can be perceived at the cranium as well as on any other part of the body. The parameters perceived are the frequency, the amplitude, the symmetry and the strength of these finest movements.

Frequency:

In a physiological condition, the frequency remains a constant 7 - 14 cycles/minute. Under certain circumstances, e.g. emotional alterations, illnesses, medication, drug abuse, etc. it can be higher or lower.

Children seem to have a slightly higher frequency of the rhythm than adults.

[30] Liem 1998

Amplitude:

It refers to the flexion movement (external rotation) and the extension movement (internal rotation). In order to judge any deviation from the standard it is essential to detect the neutral point between these two movements. A low amplitude points at reduced vitality or a reduced energetic level of the organism, respectively. An exception is the existence of a low amplitude combined with extremely accelerated craniosacral rhythm at the cranium. This may be a sign of reduced expansibility or adhesion of the meninges, e.g. following inflammatory processes of the meninges. In such a case, the craniosacral system has to work against unphysiological resistance, as the flexibility of the meninges is limited and cannot adjust to the craniosacral movements. The patient, however, may show good general vitality.

Symmetry:

The symmetry of the rhythm is established by comparing the rhythm properties at bilateral body structures. This may lead to any sort of dysfunction in the organism to be found, e.g. scars, joint disorders, adhesion, etc. Asymmetry points at the location but not at the type of the dysfunction.

Elimination of an asymmetry may be interpreted as a sign of an eliminated dysfunction in this area.

Strength:

The strength of the rhythm, either strong or weak, is evidence of the general vitality of the patient.

6) Chapter 6:

6.1) General description of malocclusion:(Classification according to **Angle**[31])

At the end of the 19th century, Dr. Edward H. Angle described the sagittal (anteroposterior) relationship between the lower and upper dental arch. It is named according to its inventor and recognized internationally.

Class I
(Normocclusion)

Class II/1
(Mandibular Retrognathism
and Protrusion of the upper front)

Class II/2
(Mandibular Retrognathism
with Retrusion of the upper front
and deep anterior overbite)

Class III
(Mandibular Prognathism)

Fig. Dr. Krenner (2006)

[31] Angle 1899

7) Chapter 7:

7.1) Research methodology:

Objective Criterion:

1. Frontal photo of the patient (as available)

2. Remote X-ray and remote X-ray analysis to determine cephalometric parameters

3. Dental impression and model of upper and lower jaw, as well as determination of bite relation

Repetition of the items 1,2 and 3 described above after one year and after two years

8) Chapter 8:

8.1) Notes on remote X-Ray and the various cephalometric analyses

In order to judge and compare malocclusions a number of defined fixed points, angles and distances at the basis of the cranium and the cranial and facial bones are used. They are compared with empirically determined standards and thus permit an accurate determination of the growth pattern on the one hand, but are also useful indicators with regard to prognosis and treatment times, on the other.

In the course of the years, some scientists have had a closer look at these measurements and established their own analytical systems, e.g. **Rickets**[32]**, Björk**[33]**, Jarabak, Bimler**[34]**, Steiner**[35], etc.

Assessment and evaluation of the measured data in my diploma thesis is made in accordance with the analyses by **Björk**, **Jarabak** and **Rickets**.

The norm or mean values, respectively, of the previously mentioned analytical systems are listed below and displayed numerically and graphically in a condensed form.

8.2) Jarabak analysis: (diagram and evaluation)

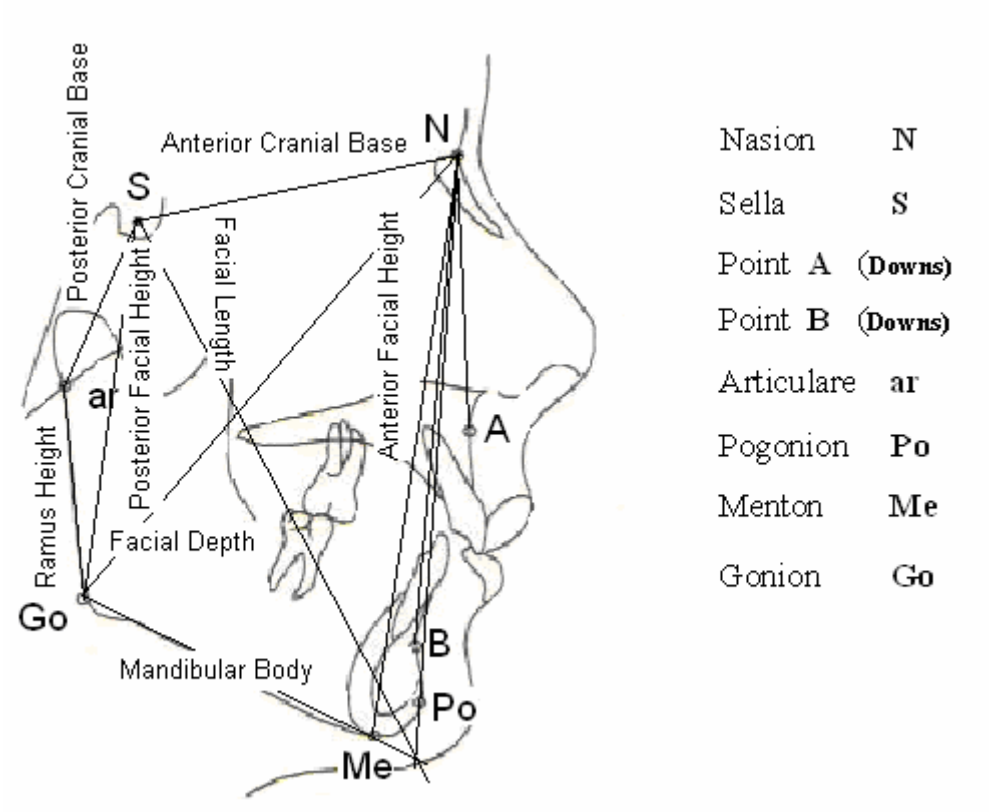


Fig. Prim. Dr. Hangl[36]

[32] Ricketts 1972
[33] Björk 1947
[34] Bimler 1973
[35] Steiner 1953
[36] Hangl 1993 Seite 113

8.3) Notes on the Point A referred to in the Jarabak analysis:[37] [38]

In his analytical system **Jarabak** has redefined the internationally recognized Point A and changed the location of this point! **Jarabak's** point A is no longer located at the lowest, concave groove of the alveolar ridge of the upper jaw below the spina nasalis anterior, but 2 mm mesial to the root apex of the upper incisor. Thus the other measuring points changed as well, i.e. when referring to a **Jarabak** analysis, SNA and ANB angle are always slightly smaller than with the usual measurements. Moreover, **Jarabak** also uses a slightly lower SNB average value of only 78°.

In my analysis I refer to the values used by Steiner et al., with a value of **82°** for **S-N-A** and one of **80°** for **S-N-B**.

8.4) Jarabak analysis: (evaluation)

A-N-B	2°	Corpus length	71+/-5mm
S-N-A	80°	1- , -1 to N-Po	0 – 2 mm
S-N-B	78°	L to E-Plane	2 +/-2 mm
Go-Gn-S-N	30°	Saddle-Angle	123°+/-5°
1+,+1 to S-N	102°+/-2°	Articular-Angle	143°+/-6°
1-,-1 to Go-Gn	90°+/-3°	Gonion-Angle = Ar- Go-Gn	130°+/-5°
1-,- to A-Po	22°+/-4°	Anglesum	396°+/-6°
1-,- 1 to A-Po	+1 +/-2 mm	posterior cranial Base	37+/-3mm
1+,+1 to 1-,-1	125-130°	Ramus Height	44+/-5mm
1+,+1 to N-Po	+5 +/-2 mm	anterior cranial Base	73+/-3mm

[37] Jarabak 1972
[38] Stockfisch 1985

The proportion of the anterior cranial basis to the corpus length should be 1,1 : 1.

Proportion of anterior (S-Go) to posterior facial height (N-Me) - the posterior facial height should be 62 - 65 % of that of the anterior one.

8.5) Björk analysis:(graphic display)

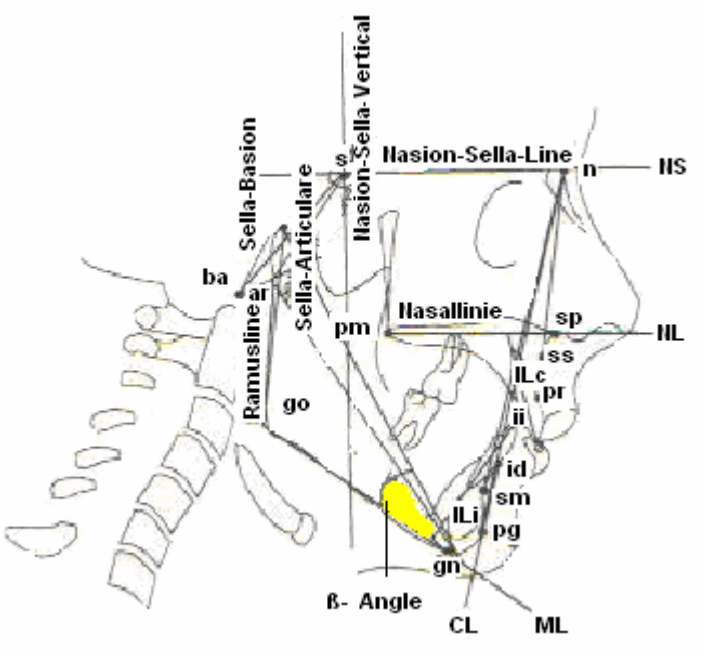


Fig. Prim. Dr. Hangl[39]

[39] Hangl 1993 Seite 112

8.6) Björk analysis: (evaluation)

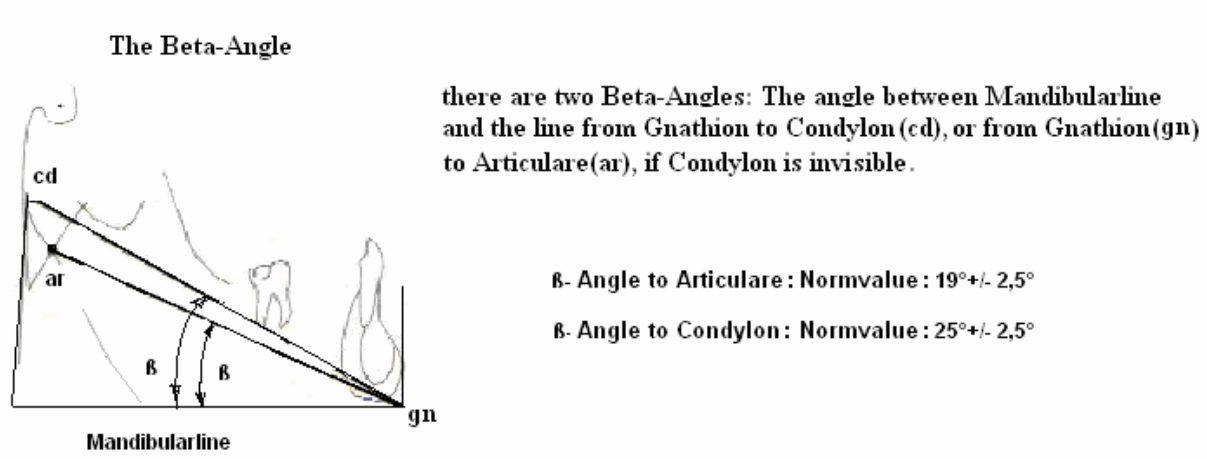


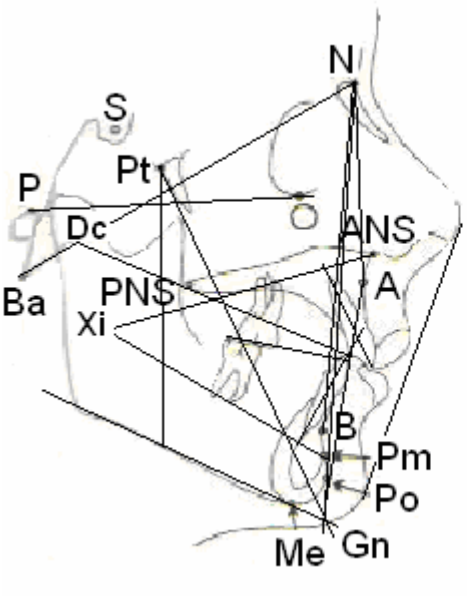
Fig. Prim. Dr. Hangl[40]

pr -n- ss = 2° +/- 1°		ar = articulare
CL - ML = 70° +/- 6°		ba = basion
ILs - NL = 110° +/- 6°		cd = condylion
ILi = 94° +/- 7°		gn = gnathion
ss -n- sm = 2° +/- 2,5°		go = gonion
ss -n- pg = 3° +/- 2,5°		ii = incision inferior
NL - OLs = 10° +/- 4°		is = incision superior
OLi - ML = 20° +/- 5°		id = infradentale
NL - ML = 25° +/- 6°		n = nasion
s - n - ss = 82° +/- 3,5°		pg = pogonion
s -n- pg = 80° +/- 3°		pm = pterygomaxillare
NSL - NL = 8° +/- 3,5°		pr = prosthion
NSL - ML = 33° +/- 6°		s = sella
n -s- ar = 124° +/- 5°		sp = spinalpoint
n -s- ba = 131° +/- 4,5°		ss = subspinale
ß zu ar = 19° +/- 2,5°		sm = supramentale
gn -go- ar = 126° +/- 6°		OLi = Lower Occlusionline
gn -go- cd = 128° +/- 6°		OLs = Upper Occlusionline
Ml = Mandibularline		Cl = Chinline
Nl = Nasalline		ILs = Upper Incisoraxis
ß-Winkel = 19°+/-2.5°od. 25°+/-2.5°		ILi = Lower Incisoraxis

Dr. Krenner 2006

[40] Hangl 1993 Seite 102

8.7) Ricketts analysis :(graphic display)



N	=	Nasion
O	=	Orbitale
Pt	=	Pterygoidpunkt
P	=	Porion
Ba	=	Basion
Po	=	Pogonion
S	=	Sellapunkt
A	=	Punkt A
B	=	Punkt B
ANS	=	Spina nasalis anterior
PNS	=	Spina nasalis posterior
ME	=	Menton

Fig. Prim. Dr. Hangl[41]

8.8) Ricketts analysis: (evaluation)

8.9) Ricketts analysis - planes, points and angles:

Basion-Nasion: from Basion to Nasion

Frankfurter Horizontal: from Porion to Orbital

Mandibularplane: from Menton to lower rim of Mandible

Facialplane: from Nasion to Pogonion

Gnathion: point of intersection between Mandibularplane and Facialplane

Facialaxis: from Pt-Point to Gnathion

A-Po-Plane: from A-Point to Pogonion

Estheticplane: from tip of nose to tip of chin

Occlusionplane: occlusional point of intersection between upper and lower first molars, to occlusional point of intersection between upper and lower canines

Longitudinal axis of first upper and lower incisors: Connection of longitudinal axis of first upper and lower incisors

[41] Hangl 1993 Seite 124

Pt-Vertical: Vertical line through Pt-Point on Frankfurter Horizontal

DC-Point: half of Basion-Nasion-distance, situated in Collum mandibulae

Collum Axis: from DC-Point to XI-Point

Corpus axis: from XI-Point to Pm-Point

CF: point of intersection between Frankfurter Horizontal and Pterygoid -Vertical

CC: point of intersection Ba-N-plane and Facial axis

Facial axis: 90°+/-3°

Facial depth: 87°+/-3°

Mandibular plane: 26°+/-4,5°

Conical angle: 68°+/-3,5°

Lower facial height: 47°+/-4°

Mandibular arc: 26°+/-4 °

Convexity of Point A: +2mm+/-2mm

Lower incisor to A-Po- Plane: +1+/-2mm

Lower incisor inclination: 22°+/-4 °

Upper Molar to PtV: Alter +3mm+/-2mm

Lower lip to esthetic plane: -2mm+/-2mm

Condyloincisalangle: 90°

Anterior cranial base length: 55mm

Porionlocalisation: -39mm

Ramusposition: 76°

Upper lip Length: 24mm+/-2mm

Maxillary height: 53°+/-3°

Inclination of Palatinal plane: -1°+/-3,5°

Maxillary Depth: 90°+/-3°

Cranial Deflexion: 27°+/-3°

Corpus length: 65mm+/-2,7mm

Posterior facial height: 55mm+/-3,3mm

Inclination of Occlusion plane to Corpus axis: 22°+/-4 °

Distance of Lip aperture to Occlusion plane: -3,5mm

Distance of lower incisor to Occlusion plane: +1mm

9) Chapter 9:

9.1) Treatment process and explanation of the orthodontic appliances used:

9.2) Treatment:

Craniosacral monitoring with an evaluation of the SBS pattern and the lesions involved (amplitude, frequency). The examinations are performed at intervals of 6 - 8 weeks. Treatment at the SBS was only carried out if a pathological pattern could be detected there. The results were filled into a form and statistically evaluated and analysed.

With regard to craniosacral monitoring I would like to emphasize that I am aware that SBS monitoring is a subjective measuring method.

During a craniosacral examination + therapy amplitude and rhythm of the SBS movements were assessed first without and then with orthodontic appliance. The holding technique corresponds to the **skullcap holding technique according to Sutherland**![42]

[42] Liem 1998 Seite 289

- The **therapist** sits at the head end of the patient with his elbows resting on the table.

- The **hands** are located at both sides of the cranium, the index finger rests on the wings of the sphenoid bones, the middle finger at the os temporales, the ring finger behind the ears, the small finger on the os occipitale and the thumbs touch each other above the head if possible.

The patients wear an orthodontic appliance, i.e. an elastic open Aktivator.

9.3) Elastic Open Aktivator:

Bild Dr. Krenner Mauthausen 2006

The elastic open activator is a bimaxillary functional orthodontic appliance. It is based on an activator by **Andresen-Häupl** and was modified due to the experience gained in daily practice. The character of functional orthodontics was defined by **Häupl** and later on by **Fränkel**. According to **Häupl** "only those appliances correspond to functional orthopedics which are basically passive, only take an effect when activated by muscles, i.e. only serve the purpose of transferring muscular activity. The intermittent actions form functional stimuli.

These stimuli have a trophic, i.e. tissue forming effect and cause bone to be formed and removed. By designing certain guidance surfaces the activator acts as a system of inclined planes". Therefore only the masticatory effect of the muscle activity is addressed in terms of "functional orthodontics and under unphysiological conditions. [43]

The **Elastic Open Aktivator** (standard appliance) itself consists of a pair of plastic parts linked up by an arch wire. The lateral teeth are enclosed by the upper and the lower lip wire and pairs of wires at the oral side. If necessary, the appliance can be adapted to various requirements in a variety of different ways.

10) Chapter 10:

10.1) Description of research and control group and contraindications:

10.2) Research group:

Comprises 10 patients of both sexes between seven and fourteen years who are evaluated randomly and show occlusal abnormalities

The period of treatment is two years and consists of orthodontic therapy (EOA - Elastic Open Aktivator) combined with osteopathic therapy

1. Photos of frontal and both sides of the patient (as available)

2. Remote X-Ray and remote X-Ray Analysis to determine cephalometric parameters

3. Dental Impression and model of upper and lower joint as well as determination of bite relation and photos of dental impressions

[43] Klammt 1984

10.3) Control group:

Comprises 9 patients of both sexes between seven and fourteen years who are evaluated randomly and show occlusal abnormalities

The term of treatment is two years and the patients only undergo orthodontic treatment

1. Photos of frontal and both sides of the patient (as available)

2. Remote X-Ray and remote X-Ray Analysis to determine cephalometric parameters

3. Dental Impression and model of upper and lower joint as well as determination of bite relation and photos of dental impressions

   The patients only wear a functional orthodontic Appliance (EOA - Elastic Open Aktivator)

10.4) Contraindication for selection of patients:

- Patients following a Tumor disease in the maxillo facial area

- Patients suffering from Cheiloschisis, Gnathoschisis or Palatoschisis

- Patients following a severe scull trauma

- Patients who evidentially suffer from severe general intoxication

11) Chapter 11:

11.1) Evaluation

11.2) Sample of a data entry form for collecting information of SBS movements and malocclusions:

This form is used for entering name, date, frequency of SBS movements, SBS lesion(s) and malocclusion(s) classified according to Angle. The average interval between two appointments is about four to six weeks.

Name:	Research Group/Control Group		Malocclusion in Angle-Classes			
Date :	SBS-Frequency (Oscillations / Minute)	SBS-Lesion:	Class I	Class II/1	Class II/2	Class III
		FLEXION LESION				
		EXTENSION LESION				
		TORSION				
		SIDEBENDING-ROTATION RIGHT				
		SIDEBENDING-ROTATION LEFT				
		INFERIOR VERTICAL STRAIN				
		SUPERIOR VERTICAL STRAIN				
		LATERAL STRAIN				
		COMPRESSION				

(Dr. Krenner Mauthausen 2006)

11.3) Sample of a data entry form for collecting cephalometric parameters:

This form is used for entering name, age, date, planes, angels and distances. Planes, angles and distances are determined by cephalometric measurement.

Name: Age:			Research Group/Control Group		
Remote X-Ray Analysis : Date:					
	measured Value	Norm Value		measured Value	Norm Value
planes, angels, distances	is°+ is mm	should° + mm	planes, angels, distances	is°+ is mm	should° + mm
Facial Axis:		(90°+/-3°)	Convexity:		(+2mm+/-2)
Facial Depth:		(87°+/-3°)	1/1 to APO:		(+1mm+/-2)
Mandibular Plane:		(26°+/-4°)	1/1 Inclination to APO:		(22°+/-4°)
Conical Angle:		(67°+/-4°)	1/1 to Occlusion-Plane:		(+1mm)
Lower Facial Height:		(47°+/-4°)	Upper Molar to PTV:		Alter+3mm+/-2
Mandibular Arc:		(27°+/-4°)	Condyloincisal Angle:		(90°)
Maxillary Depth:		(90°+/-3°)	Lower Lip to Est.-Plane:		(-2mm+/-2mm)
Corpus Axis:		(65mm+/-2.7)	Lip. / Occlusion-Plane:		(-3.5mm)
Ramusposition:		(76°+/-3°)	Porionlocalisation:		(-39mm+/-2.2)
Craniale Deflexion:		(27°+/-4°)	Ant.Cran. Base:		(55mm)
Posterior Fac.Height:		(55mm+/-3.3)	Palatinal Plane:		(-1°+/-3.5°)
Hellgreen:		(-3mm)	Maxillary Height:		(53°+/-3°)
Saddle Angle:		(123°+/-5°)	Posterior Facial Height:		(55mm+/-3.3)
Articular Angle:		(143°+/-6°)	Anterior Facial Height:		(Na-Me)
Gonion Angle:		(130°+/-7°)	Rel. Facial Height:		(62-65% d. vord.)
Angle Sum:		(396°+/-6°)	SN-Basion:		(131°+/-4.5°)
Ant.Cr. Base Length:		(73mm+/-3mm)	Pal. / Mand.Plane:		(25°+/-6°)
Post.Cr. Base Length:		(37mm+/-3mm)	Upper Occl.-Plane:		(10°+/-4°)
Gonial Angle: (upper)		(55°+/-2°)	Lower Occl.-Plane:		(20°+/-5°)
Gonial Angle: (lower)		(75°)	1-,-1 / Mand.Plane:		(90°+/-3°)
Ramus Height:		(44mm+/-5mm)	1+,+1 / to SN:		(102°+/-2°)
Body Length:		(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:		(125°-130°)
SNA:		(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:		(1,1:1)
SNB:		(80°)	ANB Diff:		(2°)

(Dr. Krenner Mauthausen 2006)

11.4) Research group:

1.Patient: Ob. K.

Fig. 1 Ob. K. 27.01.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Ob. K. 04.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 3 Ob. K. 27.01.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 4 Ob. K. 27.01.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 5 Ob. K. 12–2003 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ob. K. 12– 2003 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Ob. K. 12–2003 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Ob. K. 01–2005 ((model of upper jaw))
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Ob. K. 01–2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Ob. K. 01–2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Ob. K. 01–2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Ob. K. 01–2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 13 Ob. K. 01–2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Ob. K. (10 Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS-Lesion:	Class I	Class II/1	Class II/2	Class III
03.12.2003	8/Minute	Sidebending-Rotation Right	+			
14.01.2004	6/Minute	Sidebending-Rotation Right	+			
24.02.2004	8/Minute	Sidebending-Rotation Right	+			
23.03.2004	8/Minute	Lateral Strain Left	+			
20.04.2004	8/Minute	Lateral Strain Left	+			
18.05.2004	7/Minute	Sidebending-Rotation Right	+			
14.07.2004	8/Minute	Sidebending-Rotation Right	+			
28.09.2004	8/Minute	Sidebending-Rotation Right	+			
28.10.2004	8/Minute	Sidebending-Rotation Right	+			
04.11.2004	7/Minute	Sidebending-Rotation Right	+			
16.12.2004	7/Minute	Sidebending-Rotation Right	+			
27.01.2005	8/Minute	Sidebending-Rotation Right	+			
01.03.2005	8/Minute	Sidebending-Rotation Right	+			
31.03.2005	8/Minute	Sidebending-Rotation Right	+			
12.07.2005	8/Minute	Sidebending-Rotation Right	+			
08.09.2005	7/Minute	Sidebending-Rotation Right	+			
04.10.2005	7/Minute	Sidebending-Rotation Right	+			
06.12.2005	7/Minute	Sidebending-Rotation Right	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 03.12.2003

Name: Ob. K. (7 Years)			Research Group		
Remote X-Ray Analysis : (03.12.2003)					
Facial Axis:	93.3°	(90°+/-3°)	Convexity:	"-2mm	(+2mm+/-2)
Facial Depth:	87.8°	(87°+/-3°)	1/1 to APO:	0.9mm	(+1mm+/-2)
Mandibular Plane:	25.7°	(26°+/-4°)	1/1 Inclination to APO:	22.4°	(22°+/-4°)
Conical Angle:	66.3°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.8mm	(+1mm)
Lower Facial Height:	50.2°	(47°+/-4°)	Upper Molar to PTV:	10.4mm	Alter+3mm+/-2
Mandibular Arc:	31.6°	(27°+/-4°)	Condyloincisal Angle:	94.2°	(90°)
Maxillary Depth:	85.6°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-1mm	(-2mm+/-2mm)
Corpus Axis:	58.5mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-8mm	(-3.5mm)
Ramusposition:	76.5°	(76°+/-3°)	Porionlocalisation:	"- 30.1mm	(-39mm+/-2.2)
Craniale Deflexion:	25.9°	(27°+/-4°)	Ant.Cran. Base:	53.3mm	(55mm)
Posterior Fac.Height:	47mm	(55mm+/-3.3)	Palatinal Plane:	"- 11°	(-1°+/-3.5°)
Hellgreen:	"-10mm	(-3mm)	Maxillary Height:	48.5°	(53°+/-3°)
Saddle Angle:	115°	(123°+/-5°)	Posterior Facial Height:	62.1mm	(55mm+/-3.3)
Articular Angle:	151°	(143°+/-6°)	Anterior Facial Height:	99.7mm	(Na-Me)
Gonion Angle:	128°	(130°+/-7°)	Rel. Facial Height:	62.2%	(62-65% d. vord.)
Angle Sum:	394°	(396°+/-6°)	SN-Basion:	132°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.7mm	(73mm+/- 3mm)	Pal./Mand.Plane:	36.9°	(25°+/-6°)
Post.Cr. Base Length:	28mm	(37mm+/-3mm)	Upper Occl.-Plane:	6.8°	(10°+/-4°)
Gonial Angle: (upper)	54°	(55°+/-2°)	Lower Occl.-Plane:	11.5°	(20°+/-5°)
Gonial Angle: (lower)	74°	(75°)	1-,-1 / Mand.Plane:	87.1°	(90°+/-3°)
Ramus Height:	36mm	(44mm+/-5mm)	1+,+1 / to SN:	112°	(102°+/-2°)
Body Length:	60.3mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	125°	(125°-130°)
SNA:	76.1°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78°	(80°)	ANB Diff:	"-2°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 27.01.2005

Name: Ob. K. (9Years)			Research Group		
Remote X-Ray Analysis : (27.01.2005)					
Facial Axis:	93.7°	(90°+/-3°)	Convexity:	"-1mm	(+2mm+/-2)
Facial Depth:	85.7°	(87°+/-3°)	1/1 to APO:	1.6mm	(+1mm+/-2)
Mandibular Plane:	25.9°	(26°+/-4°)	1/1 Inclination to APO:	29.1°	(22°+/-4°)
Conical Angle:	68.2°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.2mm	(+1mm)
Lower Facial Height:	48°	(47°+/-4°)	Upper Molar to PTV:	11.4mm	Alter+3mm+/-2
Mandibular Arc:	34.2°	(27°+/-4°)	Condyloincisal Angle:	84.4°	(90°)
Maxillary Depth:	84.8°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.6mm	(-2mm+/-2mm)
Corpus Axis:	58.4mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	78.5°	(76°+/-3°)	Porionlocalisation:	"- 31.2mm	(-39mm+/-2.2)
Craniale Deflexion:	24.9°	(27°+/-4°)	Ant.Cran. Base:	54.7mm	(55mm)
Posterior Fac.Height:	47.7mm	(55mm+/-3.3)	Palatinal Plane:	"- 4°	(-1°+/-3.5°)
Hellgreen:	"-4mm	(-3mm)	Maxillary Height:	45.4°	(53°+/-3°)
Saddle Angle:	115°	(123°+/-5°)	Posterior Facial Height:	62.8mm	(55mm+/-3.3)
Articular Angle:	149°	(143°+/-6°)	Anterior Facial Height:	98.8mm	(Na-Me)
Gonion Angle:	127°	(130°+/-7°)	Rel. Facial Height:	63.6%	(62-65% d. vord.)
Angle Sum:	391°	(396°+/-6°)	SN-Basion:	127°	(131°+/-4.5°)
Ant.Cr. Base Length:	68.2mm	(73mm+/- 3mm)	Pal./Mand.Plane:	30.1°	(25°+/-6°)
Post.Cr. Base Length:	28.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	8.8°	(10°+/-4°)
Gonial Angle: (upper)	56.5°	(55°+/-2°)	Lower Occl.-Plane:	14.8°	(20°+/-5°)
Gonial Angle: (lower)	70.5°	(75°)	1-,-1 / Mand.Plane:	96.6°	(90°+/-3°)
Ramus Height:	36.6mm	(44mm+/-5mm)	1+,+1 / to SN:	107°	(102°+/-2°)
Body Length:	63.6mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	123°	(125°-130°)
SNA:	78.7°	(82°+/-3,5)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78.6°	(80°)	ANB Diff:	0.1°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 05.01.2006

Name: Ob. K. (10 Years)			Research Group		
Remote X-Ray Analysis : (05.01.2006)					
Facial Axis:	93.3°	(90°+/-3°)	Convexity:	0.1mm	(+2mm+/-2)
Facial Depth:	88°	(87°+/-3°)	1/1 to APO:	1.1mm	(+1mm+/-2)
Mandibular Plane:	23.4°	(26°+/-4°)	1/1 Inclination to APO:	25.5°	(22°+/-4°)
Conical Angle:	68.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	45.9°	(47°+/-4°)	Upper Molar to PTV:	11.5mm	Alter+3mm+/-2
Mandibular Arc:	34.8°	(27°+/-4°)	Condyloincisal Angle:	87.2°	(90°)
Maxillary Depth:	88.1°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.8mm	(-2mm+/-2mm)
Corpus Axis:	60.5mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	75.2°	(76°+/-3°)	Porionlocalisation:	"- 34.8mm	(-39mm+/-2.2)
Craniale Deflexion:	27.1°	(27°+/-4°)	Ant.Cran. Base:	55.1mm	(55mm)
Posterior Fac.Height:	49mm	(55mm+/-3.3)	Palatinal Plane:	"- 7°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	48.5°	(53°+/-3°)
Saddle Angle:	111°	(123°+/-5°)	Posterior Facial Height:	64.2mm	(55mm+/-3.3)
Articular Angle:	157°	(143°+/-6°)	Anterior Facial Height:	101mm	(Na-Me)
Gonion Angle:	122°	(130°+/-7°)	Rel. Facial Height:	63.8%	(62-65% d. vord.)
Angle Sum:	390°	(396°+/-6°)	SN-Basion:	126°	(131°+/-4.5°)
Ant.Cr. Base Length:	68.8mm	(73mm+/-3mm)	Pal./Mand.Plane:	30.6°	(25°+/-6°)
Post.Cr. Base Length:	28.7mm	(37mm+/-3mm)	Upper Occl.-Plane:	8.3°	(10°+/-4°)
Gonial Angle: (upper)	51.9°	(55°+/-2°)	Lower Occl.-Plane:	14.2°	(20°+/-5°)
Gonial Angle: (lower)	70.1°	(75°)	1-,-1 / Mand.Plane:	94.2°	(90°+/-3°)
Ramus Height:	36.7mm	(44mm+/-5mm)	1+,+1 / to SN:	110°	(102°+/-2°)
Body Length:	64.2mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	123°	(125°-130°)
SNA:	79.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78.5°	(80°)	ANB Diff:	1°	(2°)

(Dr. Krenner Mauthausen 2006)

2.Patient: Ke. S.

Fig. 1 Ke. S. 10–2004 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 2 Ke. S. 10–2004 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 3 Ke. S. 10–2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Ke. S. 06–2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Ke. S. 06–2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ke. S. 06–2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Ke. S. 05–2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Ke. S. 05–2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Ke. S. 05–2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Ke. S. (10 Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SSB-Läsion:	Class I	Class II/1	Class II/2	Class III
03.06.2004	7/ Minute	Lateral Strain Left	+			
17.06.2004	8/ Minute	Lateral Strain Left	+			
15.07.2004	7/ Minute	Lateral Strain Left	+			
19.08.2004	7/ Minute	Compression	+			
21.09.2004	8/ Minute	Torsion Left	+			
19.10.2004	7/ Minute	Torsion Left	+			
16.11.2004	6/ Minute	Torsion Left	+			
11.01.2005	7/ Minute	Torsion Left	+			
15.02.2005	7/ Minute	Torsion Left	+			
19.04.2005	7/ Minute	Torsion Left	+			
28.06.2005	7/ Minute	Torsion Left	+			
21.07.2005	8/ Minute	Torsion Left	+			
30.09.2005	8/ Minute	Torsion Left	+			
22.11.2005	8/ Minute	Torsion Left	+			
24.01.2006	8/ Minute	Torsion Left	+			
07.02.2006	7/ Minute	Torsion Left	+			
07.03.2006	8/ Minute	Torsion Left	+			
04.04.2006	7/ Minute	Torsion Left	+			
02.05.2006	7/ Minute	Torsion Left	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 27.05.2004

Name: Ke. S. (8 Years)			Research Group		
Remote X-Ray Analysis : (27.05.2004)					
Facial Axis:	85.5°	(90°+/-3°)	Convexity:	7.5mm	(+2mm+/-2)
Facial Depth:	75.6°	(87°+/-3°)	1/1 to APO:	4.1mm	(+1mm+/-2)
Mandibular Plane:	45.4°	(26°+/-4°)	1/1 Inclination to APO:	23.1°	(22°+/-4°)
Conical Angle:	58.9°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.2mm	(+1mm)
Lower Facial Height:	51°	(47°+/-4°)	Upper Molar to PTV:	2.8mm	Alter+3mm+/-2
Mandibular Arc:	38.2°	(27°+/-4°)	Condyloincisal Angle:	87.4°	(90°)
Maxillary Depth:	83.7°	(90°+/-3°)	Lower Lip to Est.-Plane:	2.3mm	(-2mm+/-2mm)
Corpus Axis:	55.8mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-6mm	(-3.5mm)
Ramusposition:	69.6°	(76°+/-3°)	Porionlocalisation:	"- 26.6mm	(-39mm+/-2.2)
Craniale Deflexion:	17.8°	(27°+/-4°)	Ant.Cran. Base:	51.5mm	(55mm)
Posterior Fac.Height:	45.6mm	(55mm+/-3.3)	Palatinal Plane:	5.5°	(-1°+/-3.5°)
Hellgreen:	"-1mm	(-3mm)	Maxillary Height:	59.1°	(53°+/-3°)
Saddle Angle:	108°	(123°+/-5°)	Posterior Facial Height:	60.4mm	(55mm+/-3.3)
Articular Angle:	174°	(143°+/-6°)	Anterior Facial Height:	106mm	(Na-Me)
Gonion Angle:	121°	(130°+/-7°)	Rel. Facial Height:	57%	(62-65% d. vord.)
Angle Sum:	403°	(396°+/-6°)	SN-Basion:	127mm	(131°+/-4.5°)
Ant.Cr. Base Length:	60mm	(73mm+/- 3mm)	Pal./Mand.Plane:	39.9°	(25°+/-6°)
Post.Cr. Base Length:	25mm	(37mm+/-3mm)	Upper Occl.-Plane:	15.5°	(10°+/-4°)
Gonial Angle: (upper)	39.5°	(55°+/-2°)	Lower Occl.-Plane:	21.7°	(20°+/-5°)
Gonial Angle: (lower)	81.5°	(75°)	1-,-1 / Mand.Plane:	90.8°	(90°+/-3°)
Ramus Height:	35.4mm	(44mm+/-5mm)	1+,+1 / to SN:	94.7°	(102°+/-2°)
Body Length:	60.6mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	129°	(125°-130°)
SNA:	84.6°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	77.2°	(80°)	ANB Diff:	7.3°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 31.05.2005

Name: Ke. S. (9 Years)			Research Group		
Remote X-Ray Analysis : (31.05.2005)					
Facial Axis:	94.1°	(90°+/-3°)	Convexity:	1.1mm	(+2mm+/-2)
Facial Depth:	84°	(87°+/-3°)	1/1 to APO:	4mm	(+1mm+/-2)
Mandibular Plane:	34.6°	(26°+/-4°)	1/1 Inclination to APO:	22.5°	(22°+/-4°)
Conical Angle:	61.3°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.6mm	(+1mm)
Lower Facial Height:	45.3°	(47°+/-4°)	Upper Molar to PTV:	9.3mm	Alter+3mm+/-2
Mandibular Arc:	32.2°	(27°+/-4°)	Condyloincisal Angle:	90.3°	(90°)
Maxillary Depth:	85.5°	(90°+/-3°)	Lower Lip to Est.-Plane:	2.2mm	(-2mm+/-2mm)
Corpus Axis:	62.5mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	71.4°	(76°+/-3°)	Porionlocalisation:	"- 34.2mm	(-39mm+/-2.2)
Craniale Deflexion:	21.3°	(27°+/-4°)	Ant.Cran. Base:	52.5mm	(55mm)
Posterior Fac.Height:	45.9mm	(55mm+/-3.3)	Palatinal Plane:	0.8°	(-1°+/-3.5°)
Hellgreen:	"-4mm	(-3mm)	Maxillary Height:	48.8°	(53°+/-3°)
Saddle Angle:	116°	(123°+/-5°)	Posterior Facial Height:	65.2mm	(55mm+/-3.3)
Articular Angle:	132°	(143°+/-6°)	Anterior Facial Height:	97.7mm	(Na-Me)
Gonion Angle:	142°	(130°+/-7°)	Rel. Facial Height:	66.7mm	(62-65% d. vord.)
Angle Sum:	390°	(396°+/-6°)	SN-Basion:	120°	(131°+/-4.5°)
Ant.Cr. Base Length:	61.2mm	(73mm+/- 3mm)	Pal./Mand.Plane:	33.7°	(25°+/-6°)
Post.Cr. Base Length:	32.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	12.7°	(10°+/-4°)
Gonial Angle: (upper)	64.1°	(55°+/-2°)	Lower Occl.-Plane:	23.3°	(20°+/-5°)
Gonial Angle: (lower)	77.9°	(75°)	1-,-1 / Mand.Plane:	85.2°	(90°+/-3°)
Ramus Height:	38.6mm	(44mm+/-5mm)	1+,+1 / to SN:	113°	(102°+/-2°)
Body Length:	60mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	129°	(125°-130°)
SNA:	88.1°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	86.7°	(80°)	ANB Diff:	1.3°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 03.05.2006

Name: Ke. S. (10 Years)			Research Group		
Remote X-Ray Analysis (03.05.2006)					
Facial Axis:	89.1°	(90°+/-3°)	Convexity:	1.4mm	(+2mm+/-2)
Facial Depth:	80.5°	(87°+/-3°)	1/1 to APO:	4.7mm	(+1mm+/-2)
Mandibular Plane:	38.6°	(26°+/-4°)	1/1 Inclination to APO:	27.2°	(22°+/-4°)
Conical Angle:	60.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.6mm	(+1mm)
Lower Facial Height:	45.4°	(47°+/-4°)	Upper Molar to PTV:	5.1mm	Alter+3mm+/-2
Mandibular Arc:	25.7°	(27°+/-4°)	Condyloincisal Angle:	86°	(90°)
Maxillary Depth:	82.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	2.1mm	(-2mm+/-2mm)
Corpus Axis:	63.7mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	63.4°	(76°+/-3°)	Porionlocalisation:	"- 33.7mm	(-39mm+/-2.2)
Craniale Deflexion:	19.3°	(27°+/-4°)	Ant.Cran. Base:	52.3mm	(55mm)
Posterior Fac.Height:	47.7mm	(55mm+/-3.3)	Palatinal Plane:	5.3°	(-1°+/-3.5°)
Hellgreen:	"-5mm	(-3mm)	Maxillary Height:	57.1°	(53°+/-3°)
Saddle Angle:	126°	(123°+/-5°)	Posterior Facial Height:	67.1°	(55mm+/-3.3)
Articular Angle:	134°	(143°+/-6°)	Anterior Facial Height:	108mm	(Na-Me)
Gonion Angle:	138°	(130°+/-7°)	Rel. Facial Height:	62.3mm	(62-65% d. vord.)
Angle Sum:	398°	(396°+/-6°)	SN-Basion:	134°	(131°+/-4.5°)
Ant.Cr. Base Length:	60.7mm	(73mm+/- 3mm)	Pal. / Mand.Plane:	33.2°	(25°+/-6°)
Post.Cr. Base Length:	31.9mm	(37mm+/-3mm)	Upper Occl.-Plane:	14.9°	(10°+/-4°)
Gonial Angle: (upper)	57.1°	(55°+/-2°)	Lower Occl.-Plane:	23.3°	(20°+/-5°)
Gonial Angle: (lower)	80.9°	(75°)	1-,-1 / Mand.Plane:	89.8°	(90°+/-3°)
Ramus Height:	40.8mm	(44mm+/-5mm)	1+,+1 / to SN:	107°	(102°+/-2°)
Body Length:	59.8mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	123°	(125°-130°)
SNA:	81°	(82°+/-3,5)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	79.3°	(80°)	ANB Diff:	1.7°	(2°)

(Dr. Krenner Mauthausen 2006)

3.Patient: Hi. F.

Fig. 1 Hi. F. 04.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Hi. F. 04.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 3 Hi. F. 09- 2003 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Hi. F. 09- 2003 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Hi. F. 09- 2003 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Hi. F. 01- 2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Hi.F. 01- 2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Hi. F. 01- 2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Hi. F. 02- 2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Hi. F. 02- 2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Hi. F. 02- 2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Hi. F. (11Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
24.02.2004	8/ Minute	Lateral Strain Left			+	
28.04.2004	7/ Minute	Lateral Strain Left			+	
29.06.2004	8/ Minute	Lateral Strain Left			+	
21.09.2004	7/ Minute	Sidebending-Rotation Right			+	
16.11.2004	7/ Minute	Sidebending-Rotation Right			+	
15.02.2005	7/ Minute	Sidebending-Rotation Right			+	
31.03.2005	8/ Minute	Sidebending-Rotation Right			+	
19.05.2005	8/ Minute	Sidebending-Rotation Right			+	
16.06.2005	8/ Minute	Sidebending-Rotation Right			+	
19.07.2005	8/ Minute	Sidebending-Rotation Right			+	
08.09.2005	7/ Minute	Sidebending-Rotation Right			+	
04.10.2005	7/ Minute	Sidebending-Rotation Right			+	
29.11.2005	7/ Minute	Sidebending-Rotation Right			+	
17.12.2005	8/ Minute	Sidebending-Rotation Right	+			
09.02.2006	8/ Minute	Sidebending-Rotation Right	+			
30.03.2006	7/ Minute	Sidebending-Rotation Right	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 09.10.2003

Name: Hi. F. (8 Years)			Research Group		
Remote X-Ray Analysis (09.10.2003)					
Facial Axis:	92.5°	(90°+/-3°)	Convexity:	1.7mm	(+2mm+/-2)
Facial Depth:	87.3°	(87°+/-3°)	1/1 to APO:	"-0.2	(+1mm+/-2)
Mandibular Plane:	23.7°	(26°+/-4°)	1/1 Inclination to APO:	14.1°	(22°+/-4°)
Conical Angle:	68.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	"-1mm	(+1mm)
Lower Facial Height:	47.7°	(47°+/-4°)	Upper Molar to PTV:	12mm	Alter+3mm+/-2
Mandibular Arc:	33.5°	(27°+/-4°)	Condyloincisal Angle:	97.5°	(90°)
Maxillary Depth:	89.5°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	60.6mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	76°	(76°+/-3°)	Porionlocalisation:	"- 27.9mm	(-39mm+/-2.2)
Craniale Deflexion:	26°	(27°+/-4°)	Ant.Cran. Base:	54.2mm	(55mm)
Posterior Fac.Height:	53.9mm	(55mm+/-3.3)	Palatinal Plane:	"- 9°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	49.8°	(53°+/-3°)
Saddle Angle:	123°	(123°+/-5°)	Posterior Facial Height:	66.4mm	(55mm+/-3.3)
Articular Angle:	141°	(143°+/-6°)	Anterior Facial Height:	102mm	(Na-Me)
Gonion Angle:	127°	(130°+/-7°)	Rel. Facial Height:	65.1%	(62-65% d. vord.)
Angle Sum:	391°	(396°+/-6°)	SN-Basion:	132°	(131°+/-4.5°)
Ant.Cr. Base Length:	66.6mm	(73mm+/- 3mm)	Pal./Mand.Plane:	33.1°	(25°+/-6°)
Post.Cr. Base Length:	29.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	18.7°	(10°+/-4°)
Gonial Angle: (upper)	55.7°	(55°+/-2°)	Lower Occl.-Plane:	10.4°	(20°+/-5°)
Gonial Angle: (lower)	71.3°	(75°)	1-,-1 / Mand.Plane:	85.1°	(90°+/-3°)
Ramus Height:	40.9mm	(44mm+/-5)	1+,+1 / to SN:	97.2°	(102°+/-2°)
Body Length:	62.3mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	145°	(125°-130°)
SNA:	81°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78.2°	(80°)	ANB Diff:	2.7°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 15.01.2005

Name: Hi. F. (10 Years)			Research Group		
Remote X-Ray Analysis (15.01.2005)					
Facial Axis:	93.1°	(90°+/-3°)	Convexity:	0.3mm	(+2mm+/-2)
Facial Depth:	90.6°	(87°+/-3°)	1/1 to APO:	1.7mm	(+1mm+/-2)
Mandibular Plane:	20.9°	(26°+/-4°)	1/1 Inclination to APO:	26.1°	(22°+/-4°)
Conical Angle:	68.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	47.3°	(47°+/-4°)	Upper Molar to PTV:	13.1mm	Alter+3mm+/-2
Mandibular Arc:	29.4°	(27°+/-4°)	Condyloincisal Angle:	87.8°	(90°)
Maxillary Depth:	91°	(90°+/-3°)	Lower Lip to Est.-Plane:	0mm	(-2mm+/-2mm)
Corpus Axis:	60.9mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-6mm	(-3.5mm)
Ramusposition:	79.8°	(76°+/-3°)	Porionlocalisation:	"- 37.7mm	(-39mm+/-2.2)
Craniale Deflexion:	27°	(27°+/-4°)	Ant.Cran. Base:	53.5mm	(55mm)
Posterior Fac.Height:	58.1mm	(55mm+/-3.3)	Palatinal Plane:	"- 9°	(-1°+/-3.5°)
Hellgreen:	"-4mm	(-3mm)	Maxillary Height:	54.3°	(53°+/-3°)
Saddle Angle:	124°	(123°+/-5°)	Posterior Facial Height:	72mm	(55mm+/-3.3)
Articular Angle:	139°	(143mm+/-6°)	Anterior Facial Height:	105mm	(Na-Me)
Gonion Angle:	127°	(130°+/-7°)	Rel. Facial Height:	68.3%	(62-65% d. vord.)
Angle Sum:	390°	(396°+/-6°)	SN-Basion:	133°	(131°+/-4.5°)
Ant.Cr. Base Length:	66.3°	(73mm+/-3mm)	Pal./Mand.Plane:	29.7°	(25°+/-6°)
Post.Cr. Base Length:	30.6°	(37mm+/-3mm)	Upper Occl.-Plane:	16.6°	(10°+/-4°)
Gonial Angle: (upper)	54.3°	(55°+/-2°)	Lower Occl.-Plane:	10.3°	(20°+/-5°)
Gonial Angle: (lower)	72.7°	(75°)	1-,-1 / Mand.Plane:	95.1°	(90°+/-3°)
Ramus Height:	45.9mm	(44mm+/-5)	1+,+1 / to SN:	107°	(102°+/-2°)
Body Length:	61.9mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	127°	(125°-130°)
SNA:	81.4°	(82°+/-3,5)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	79.3°	(80°)	ANB Diff:	2.1°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 20.02.2006

Name: Himm. Flo. (11 Years)			Research Group		
Remote X-Ray Analysis (20.02.2006)					
Facial Axis:	90.4°	(90°+/-3°)	Convexity:	0mm	(+2mm+/-2)
Facial Depth:	88.7°	(87°+/-3°)	1/1 to APO:	1.9mm	(+1mm+/-2)
Mandibular Plane:	21.3°	(26°+/-4°)	1/1 Inclination to APO:	25.6°	(22°+/-4°)
Conical Angle:	69.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.7mm	(+1mm)
Lower Facial Height:	47.2°	(47°+/-4°)	Upper Molar to PTV:	12.5mm	Alter+3mm+/-2
Mandibular Arc:	35.3°	(27°+/-4°)	Condyloincisal Angle:	88.5°	(90°)
Maxillary Depth:	88.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-3mm	(-2mm+/-2mm)
Corpus Axis:	62.1mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	75.8°	(76°+/-3°)	Porionlocalisation:	"- 34.2mm	(-39mm+/-2.2)
Craniale Deflexion:	27.8°	(27°+/-4°)	Ant.Cran. Base:	54mm	(55mm)
Posterior Fac.Height:	58.6mm	(55mm+/-3.3)	Palatinal Plane:	"- 8°	(-1°+/-3.5°)
Hellgreen:	"-5mm	(-3mm)	Maxillary Height:	54.3°	(53°+/-3°)
Saddle Angle:	123°	(123°+/-5°)	Posterior Facial Height:	71.4mm	(55mm+/-3.3)
Articular Angle:	143°	(143mm+/-6°)	Anterior Facial Height:	108mm	(Na-Me)
Gonion Angle:	124°	(130°+/-7°)	Rel. Facial Height:	66.2%	(62-65% d. vord.)
Angle Sum:	390°	(396°+/-6°)	SN-Basion:	132°	(131°+/-4.5°)
Ant.Cr. Base Length:	68°	(73mm+/- 3mm)	Pal./Mand.Plane:	29.6°	(25°+/-6°)
Post.Cr. Base Length:	31.8°	(37mm+/-3mm)	Upper Occl.-Plane:	16.5°	(10°+/-4°)
Gonial Angle: (upper)	52.8°	(55°+/-2°)	Lower Occl.-Plane:	12.6°	(20°+/-5°)
Gonial Angle: (lower)	71.2°	(75°)	1-,-1 / Mand.Plane:	95°	(90°+/-3°)
Ramus Height:	43.3mm	(44mm+/-5)	1+,+1 / to SN:	99.2°	(102°+/-2°)
Body Length:	66.1mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	134°	(125°-130°)
SNA:	78.1°	(82°+/-3,5)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	77.6°	(80°)	ANB Diff:	0.5°	(2°)

(Dr. Krenner Mauthausen 2006)

4.Patient: Gi. M.

Fig. 1 Gi. M. 06.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Gi. M. 11-2003 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 3 Gi. M. 11-2003 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Gi. M. 11-2003 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Gi. M. 03-2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Gi. M. 03-2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Gi. M. 03-2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

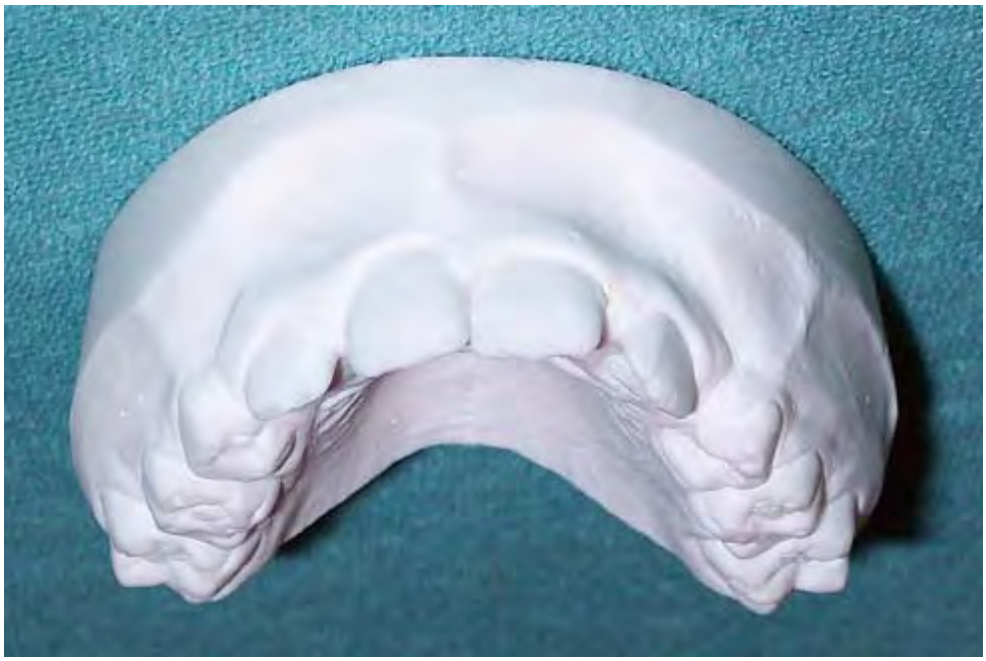


Fig. 8 Gi. M. 01-2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Gi. M. 01-2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Gi. M. 01-2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Gi. M. (11Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
30.10.2003	8/ Minute	Sidebending-Rotation Right	+			
04.12.2003	8/ Minute	Lateral Strain Left (Stat. post Trauma!)	+			
22.01.2004	7/ Minute	Lateral Strain Left (Stat. post Trauma!)	+			
01.04.2004	8/ Minute	Sidebending-Rotation Right	+			
17.06.2004	8/ Minute	Sidebending-Rotation Right	+			
09.12.2005	8/ Minute	Sidebending-Rotation Right	+			
20.01.2005	7/ Minute	Sidebending-Rotation Right	+			
17.03.2005	7/ Minute	Sidebending-Rotation Right	+			
21.04.2005	8/ Minute	Sidebending-Rotation Right	+			
30.06.2005	8/ Minute	Sidebending-Rotation Right	+			
29.08.2005	7/ Minute	Sidebending-Rotation Right	+			
06.10.2005	7/ Minute	Sidebending-Rotation Right	+			
17.11.2005	7/ Minute	Sidebending-Rotation Right	+			
15.12.2005	7/ Minute	Sidebending-Rotation Right	+			
26.01.2006	7/ Minute	Sidebending-Rotation Right	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 04.11.2003

Name: Gi. M. (9Years)			Research Group		
Remote X-Ray Analysis (04.11.2003)					
Facial Axis:	91.4°	(90°+/-3°)	Convexity:	"-1mm	(+2mm+/-2)
Facial Depth:	80.1°	(87°+/-3°)	1/1 to APO:	2.2mm	(+1mm+/-2)
Mandibular Plane:	36.1°	(26°+/-4°)	1/1 Inclination to APO:	21.3°	(22°+/-4°)
Conical Angle:	63.7°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	47.6°	(47°+/-4°)	Upper Molar to PTV:	4.7mm	Alter+3mm+/-2
Mandibular Arc:	34°	(27°+/-4°)	Condyloincisal Angle :	92.3°	(90°)
Maxillary Depth:	79°	(90°+/-3°)	Lower Lip to Est.-Plane:	2.1mm	(-2mm+/-2mm)
Corpus Axis:	63.7mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	61.6°	(76°+/-3°)	Porionlocalisation:	"- 30mm	(-39mm+/-2.2)
Craniale Deflexion:	18°	(27°+/-4°)	Ant.Cran. Base:	50.7mm	(55mm)
Posterior Fac.Height:	51.5mm	(55mm+/-3.3)	Palatinal Plane:	"- 4°	(-1°+/-3.5°)
Hellgreen:	"-4mm	(-3mm)	Maxillary Height:	50.3°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	63mm	(55mm+/-3.3)
Articular Angle:	138°	(143mm+/-6°)	Anterior Facial Height:	99.7mm	(Na-Me)
Gonion Angle:	133°	(130°+/-7°)	Rel. Facial Height:	63.2%	(62-65% d. vord.)
Angle Sum:	393°	(396°+/-6°)	SN-Basion:	127°	(131°+/-4.5°)
Ant.Cr. Base Length:	63.2mm	(73mm+/- 3mm)	Pal. / Mand.Plane:	40.2°	(25°+/-6°)
Post.Cr. Base Length:	31.1mm	(37mm+/-3°)	Upper Occl.-Plane:	15.8°	(10°+/-4°)
Gonial Angle: (upper)	59.1°	(55°+/-2°)	Lower Occl.-Plane:	19.4°	(20°+/-5°)
Gonial Angle: (lower)	73.9°	(75°)	1-,-1 / Mand.Plane:	84.3°	(90°+/-3°)
Ramus Height:	36.2mm	(44mm+/-5)	1+,+1 / to SN:	105°	(102°+/-2°)
Body Length:	61.8mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	135°	(125°-130°)
SNA:	80.8°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	80.9°	(80°)	ANB Diff:	"-0.2°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 20.01.2005

Name: Gi. M. (10 Years)			Research Group		
Remote X-Ray Analysis (20.01.2005)					
Facial Axis:	86°	(90°+/-3°)	Convexity:	1.3mm	(+2mm+/-2)
Facial Depth:	86°	(87°+/-3°)	1/1 to APO:	2.1mm	(+1mm+/-2)
Mandibular Plane:	29.9°	(26°+/-4°)	1/1 Inclination to APO:	21.6°	(22°+/-4°)
Conical Angle:	63.9°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.9mm	(+1mm)
Lower Facial Height:	50.8°	(47°+/-4°)	Upper Molar to PTV:	10.6mm	Alter+3mm+/-2
Mandibular Arc:	24.6°	(27°+/-4°)	Condyloincisal Angle:	89.6°	(90°)
Maxillary Depth:	87.6°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.3mm	(-2mm+/-2mm)
Corpus Axis:	61.3mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-6mm	(-3.5mm)
Ramusposition:	74.9°	(76°+/-3°)	Porionlocalisation:	"- 34.4mm	(-39mm+/-2.2)
Craniale Deflexion:	29.4°	(27°+/-4°)	Ant.Cran. Base:	54.3mm	(55mm)
Posterior Fac.Height:	53mm	(55mm+/-3.3)	Palatinal Plane:	"- 8°	(-1°+/-3.5°)
Hellgreen:	"-4mm	(-3mm)	Maxillary Height:	54°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	64.3mm	(55mm+/-3.3)
Articular Angle:	148°	(143mm+/-6°)	Anterior Facial Height:	106mm	(Na-Me)
Gonion Angle:	128°	(130°+/-7°)	Rel. Facial Height:	60.4%	(62-65% d. vord.)
Angle Sum:	398°	(396°+/-6°)	SN-Basion:	129°	(131°+/-4.5°)
Ant.Cr. Base Length:	63.6mm	(73mm+/- 3mm)	Pal./Mand.Plane:	37.7°	(25°+/-6°)
Post.Cr. Base Length:	30.8mm	(37mm+/-3mm)	Upper Occl.-Plane:	14°	(10°+/-4°)
Gonial Angle: (upper)	51.7°	(55°+/-2°)	Lower Occl.-Plane:	18.3°	(20°+/-5°)
Gonial Angle: (lower)	76.3°	(75°)	1-,-1 / Mand.Plane:	87.2°	(90°+/-3°)
Ramus Height:	35.9°	(44mm+/-5mm)	1+,+1 / to SN:	97.3°	(102°+/-2°)
Body Length:	62°	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	136°	(125°-130°)
SNA:	78.4°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	76°	(80°)	ANB Diff:	2.4°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 26.01.2006

Name: Gi. M. (11 Years)			Research Group		
Remote X-Ray Analysis (26.01.2006)					
Facial Axis:	90.1°	(90°+/-3°)	Convexity:	"-1mm	(+2mm+/-2)
Facial Depth:	87.2°	(87°+/-3°)	1/1 to APO:	2.9mm	(+1mm+/-2)
Mandibular Plane:	25.9°	(26°+/-4°)	1/1 Inclination to APO:	24.9°	(22°+/-4°)
Conical Angle:	66.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.7°	(+1mm)
Lower Facial Height:	48.3°	(47°+/-4°)	Upper Molar to PTV:	11.5mm	Alter+3mm+/-2
Mandibular Arc:	34.5°	(27°+/-4°)	Condyloincisal Angle:	90.3°	(90°)
Maxillary Depth:	86.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	61.9mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-4mm	(-3.5mm)
Ramusposition:	75.8°	(76°+/-3°)	Porionlocalisation:	"- 31.8mm	(-39mm+/-2.2)
Craniale Deflexion:	27.4°	(27°+/-4°)	Ant.Cran. Base:	54.3mm	(55mm)
Posterior Fac.Height:	52.3mm	(55mm+/-3.3)	Palatinal Plane:	"- 6°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	52.9°	(53°+/-3°)
Saddle Angle:	118°	(123°+/-5°)	Posterior Facial Height:	68.7mm	(55mm+/-3.3)
Articular Angle:	148°	(143mm+/-6°)	Anterior Facial Height:	105mm	(Na-Me)
Gonion Angle:	126°	(130°+/-7°)	Rel. Facial Height:	65.3%	(62-65% d. vord.)
Angle Sum:	392°	(396°+/-6°)	SN-Basion:	126°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.2mm	(73mm+/- 3mm)	Pal./Mand.Plane:	32.2°	(25°+/-6°)
Post.Cr. Base Length:	31.8mm	(37mm+/-3mm)	Upper Occl.-Plane:	11.1°	(10°+/-4°)
Gonial Angle: (upper)	52.4°	(55°+/-2°)	Lower Occl.-Plane:	19°	(20°+/-5°)
Gonial Angle: (lower)	73.6°	(75°)	1-,-1 / Mand.Plane:	90.9°	(90°+/-3°)
Ramus Height:	39.5mm	(44mm+/-5mm)	1+,+1 / to SN:	106°	(102°+/-2°)
Body Length:	64mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	129°	(125°-130°)
SNA:	79.3°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	79.2°	(80°)	ANB Diff:	0	(2°)

(Dr. Krenner Mauthausen 2006)

5.Patient: Ei. A.

Fig. 1 Ei. A. 10/2003
(Photo Dr. Krenner Mauthausen 2003)

Fig. 2 Ei. A. 24.05.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 3 Ei. A. 24.05.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 4 Ei. A. 24.05.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 5 Ei. A. 09.12.2003 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ei. A. 09.12.2003 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Ei. A. 09.12.2003 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Ei. A. 10-2004 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Ei. A. 10-2004 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

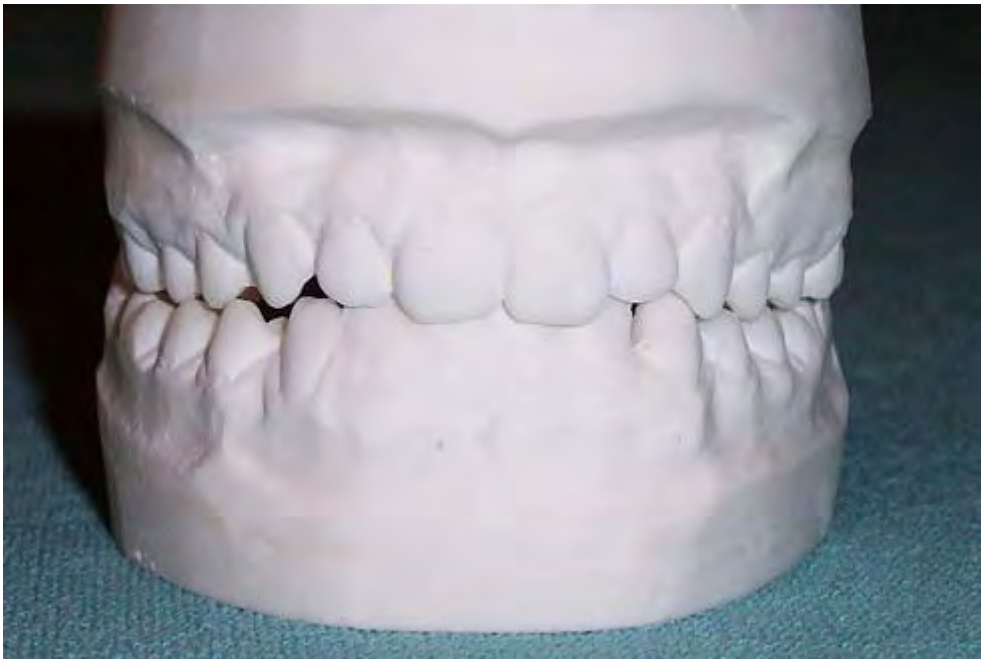


Fig. 10 Ei. A. 10-2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Ei. A. 02-2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Ei. A. 02-2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 13 Ei. A. 02-2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Ei. A. (10 Years)		Research Group	Malocclusion in Angle-Classes			
Date:	SBS-Frequency:	SSB-Läsion:	Class I	Class II/1	Class II/2	Class III
23.10.2003	8/ Minute	Sidebending-Rotation Right			+	
04.12.2003	8/ Minute	Sidebending-Rotation Right			+	
08.01.2004	7/ Minute	Sidebending-Rotation Right			+	
24.02.2004	7/ Minute	Sidebending-Rotation Right			+	
23.03.2004	7/ Minute	Sidebending-Rotation Right			+	
06.05.2004	7/ Minute	Sidebending-Rotation Right			+	
13.07.2004	8/ Minute	Sidebending-Rotation Right			+	
16.09.2004	8/ Minute	Sidebending-Rotation Right			+	
28.10.2004	7/ Minute	Sidebending-Rotation Right			+	
14.12.2004	7/ Minute	Sidebending-Rotation Right			+	
15.02.2005	7/ Minute	Sidebending-Rotation Right			+	
15.03.2005	8/ Minute	Sidebending-Rotation Right			+	
12.04.2005	7/ Minute	Sidebending-Rotation Right			+	
19.07.2005	8/ Minute	Sidebending-Rotation Right			+	
25.08.2005	7/ Minute	Sidebending-Rotation Right	+			
15.09.2005	7/ Minute	Sidebending-Rotation Right	+			
18.10.2005	7/ Minute	Sidebending-Rotation Right	+			
10.11.2005	7/ Minute	Sidebending-Rotation Right	+			
12.12.2005	8/ Minute	Sidebending-Rotation Right	+			
12.01.2006	8/ Minute	Sidebending-Rotation Right	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 09.12.2003

Name: Ei. A. (8 Years)			Research Group		
Remote X-Ray Analysis (09.12.2003)					
Facial Axis:	87.2°	(90°+/-3°)	Convexity:	0mm	(+2mm+/-2)
Facial Depth:	84.6°	(87°+/-3°)	1/1 to APO:	1.5mm	(+1mm+/-2)
Mandibular Plane:	25.7°	(26°+/-4°)	1/1 Inclination to APO:	20.9°	(22°+/-4°)
Conical Angle:	69.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	3.2mm	(+1mm)
Lower Facial Height:	46.6°	(47°+/-4°)	Upper Molar to PTV:	7mm	Alter+3mm+/-2
Mandibular Arc:	40.6°	(27°+/-4°)	Condyloincisal Angle:	92.6°	(90°)
Maxillary Depth:	84.3°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	66.4mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	68.2°	(76°+/-3°)	Porionlocalisation:	"- 39mm	(-39mm+/-2.2)
Craniale Deflexion:	26.4°	(27°+/-4°)	Ant.Cran. Base:	54.9mm	(55mm)
Posterior Fac.Height:	63.5mm	(55mm+/-3.3)	Palatinal Plane:	"- 3°	(-1°+/-3.5°)
Hellgreen:	"-7mm	(-3mm)	Maxillary Height:	59.6°	(53°+/-3°)
Saddle Angle:	126°	(123°+/-5°)	Posterior Facial Height:	74.2mm	(55mm+/-3.3)
Articular Angle:	151°	(143mm+/-6°)	Anterior Facial Height:	111mm	(Na-Me)
Gonion Angle:	114°	(130°+/-7°)	Rel. Facial Height:	66.9%	(62-65% d. vord.)
Angle Sum:	391°	(396°+/-6°)	SN-Basion:	131°	(131°+/-4.5°)
Ant.Cr. Base Length:	63.4mm	(73mm+/-3mm)	Pal./Mand.Plane:	28.5°	(25°+/-6°)
Post.Cr. Base Length:	34.1mm	(37mm+/-3mm)	Upper Occl.-Plane:	16.9°	(10°+/-4°)
Gonial Angle: (upper)	44,6°	(55°+/-2°)	Lower Occl.-Plane:	13.9°	(20°+/-5°)
Gonial Angle: (lower)	69.4°	(75°)	1-,-1 / Mand.Plane:	90.1°	(90°+/-3°)
Ramus Height:	42.5mm	(44mm+/-5mm)	1+,+1 / to SN:	97.7°	(102°+/-2°)
Body Length:	70.8mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	140°	(125°-130°)
SNA:	78.3°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1.1 zu 1	(1,1:1)
SNB:	77.7°	(80°)	ANB Diff:	0.5°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 14.12.2004

Name: Ei. A. (9 Years)			Research Group		
Remote X-Ray Analysis (14.12.2004)					
Facial Axis:	88.6°	(90°+/-3°)	Convexity:	0mm	(+2mm+/-2)
Facial Depth:	86°	(87°+/-3°)	1/1 to APO:	"-0.5mm	(+1mm+/-2)
Mandibular Plane:	26.1°	(26°+/-4°)	1/1 Inclination to APO:	17.8°	(22°+/-4°)
Conical Angle:	67.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.6mm	(+1mm)
Lower Facial Height:	46.8°	(47°+/-4°)	Upper Molar to PTV:	8.5mm	Alter+3mm+/-2
Mandibular Arc:	36.5°	(27°+/-4°)	Condyloincisal Angle:	97.9°	(90°)
Maxillary Depth:	85.9°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	67.6mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-6mm	(-3.5mm)
Ramusposition:	66.6°	(76°+/-3°)	Porionlocalisation:	"- 40.5mm	(-39mm+/-2.2)
Craniale Deflexion:	25.2°	(27°+/-4°)	Ant.Cran. Base:	53.1mm	(55mm)
Posterior Fac.Height:	63.8mm	(55mm+/-3.3)	Palatinal Plane:	"- 4°	(-1°+/-3.5°)
Hellgreen:	"-6mm	(-3mm)	Maxillary Height:	55.7°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	77.3mm	(55mm+/-3.3)
Articular Angle:	148°	(143mm+/-6°)	Anterior Facial Height:	111mm	(Na-Me)
Gonion Angle:	117°	(130°+/-7°)	Rel. Facial Height:	69.9%	(62-65% d. vord.)
Angle Sum:	387°	(396°+/-6°)	SN-Basion:	125°	(131°+/-4.5°)
Ant.Cr. Base Length:	64.1°	(73mm+/-3mm)	Pal./Mand.Plane:	30.2°	(25°+/-6°)
Post.Cr. Base Length:	36.2°	(37mm+/-3mm)	Upper Occl.-Plane:	15°	(10°+/-4°)
Gonial Angle: (upper)	47.5°	(55°+/-2°)	Lower Occl.-Plane:	14.7°	(20°+/-5°)
Gonial Angle: (lower)	69.5°	(75°)	1-,-1 / Mand.Plane:	85.6°	(90°+/-3°)
Ramus Height:	44.1mm	(44mm+/-5mm)	1+,+1 / to SN:	102°	(102°+/-2°)
Body Length:	73.1mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	144°	(125°-130°)
SNA:	84.2°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1.1 zu 1	(1,1:1)
SNB:	82.8°	(80°)	ANB Diff:	1.4°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 10.02.2006

Name: Ei. A. (10 Years)			Research Group		
Remote X-Ray Analysis (10.02.2006)					
Facial Axis:	88°	(90°+/-3°)	Convexity:	"-3mm	(+2mm+/-2)
Facial Depth:	81°	(87°+/-3°)	1/1 to APO:	0.4mm	(+1mm+/-2)
Mandibular Plane:	30.8°	(26°+/-4°)	1/1 Inclination to APO:	26.9°	(22°+/-4°)
Conical Angle:	68.1°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.7mm	(+1mm)
Lower Facial Height:	42.7°	(47°+/-4°)	Upper Molar to PTV:	7.4mm	Alter+3mm+/-2
Mandibular Arc:	22.7°	(27°+/-4°)	Condyloincisal Angle:	84.9°	(90°)
Maxillary Depth:	79°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-1mm	(-2mm+/-2mm)
Corpus Axis:	71.1mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	52.8°	(76°+/-3°)	Porionlocalisation:	"- 45.1mm	(-39mm+/-2.2)
Craniale Deflexion:	20.9°	(27°+/-4°)	Ant.Cran. Base:	54.7mm	(55mm)
Posterior Fac.Height:	60.3mm	(55mm+/-3.3)	Palatinal Plane:	3°	(-1°+/-3.5°)
Hellgreen:	"-8mm	(-3mm)	Maxillary Height:	58.6°	(53°+/-3°)
Saddle Angle:	128°	(123°+/-5°)	Posterior Facial Height:	79.1mm	(55mm+/-3.3)
Articular Angle:	126°	(143mm+/-6°)	Anterior Facial Height:	113mm	(Na-Me)
Gonion Angle:	134°	(130°+/-7°)	Rel. Facial Height:	69.9%	(62-65% d. vord.)
Angle Sum:	388°	(396°+/-6°)	SN-Basion:	130°	(131°+/-4.5°)
Ant.Cr. Base Length:	64.8mm	(73mm+/-3mm)	Pal./Mand.Plane:	27.7°	(25°+/-6°)
Post.Cr. Base Length:	49mm	(37mm+/-3mm)	Upper Occl.-Plane:	13.8°	(10°+/-4°)
Gonial Angle: (upper)	63.1°	(55°+/-2°)	Lower Occl.-Plane:	14.2°	(20°+/-5°)
Gonial Angle: (lower)	70.9°	(75°)	1-,-1 / Mand.Plane:	92.3°	(90°+/-3°)
Ramus Height:	39.5mm	(44mm+/-5mm)	1+,+1 / to SN:	106°	(102°+/-2°)
Body Length:	70mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	132°	(125°-130°)
SNA:	80.1°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	80.9°	(80°)	ANB Diff:	"-0.9	(2°)

(Dr. Krenner Mauthausen 2006)

6.Patient: Re. A.

Fig. 1 Re. A. 18.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Re. A. 18.10.2005
(Photo Dr. Krenner Mauthausen 2005)

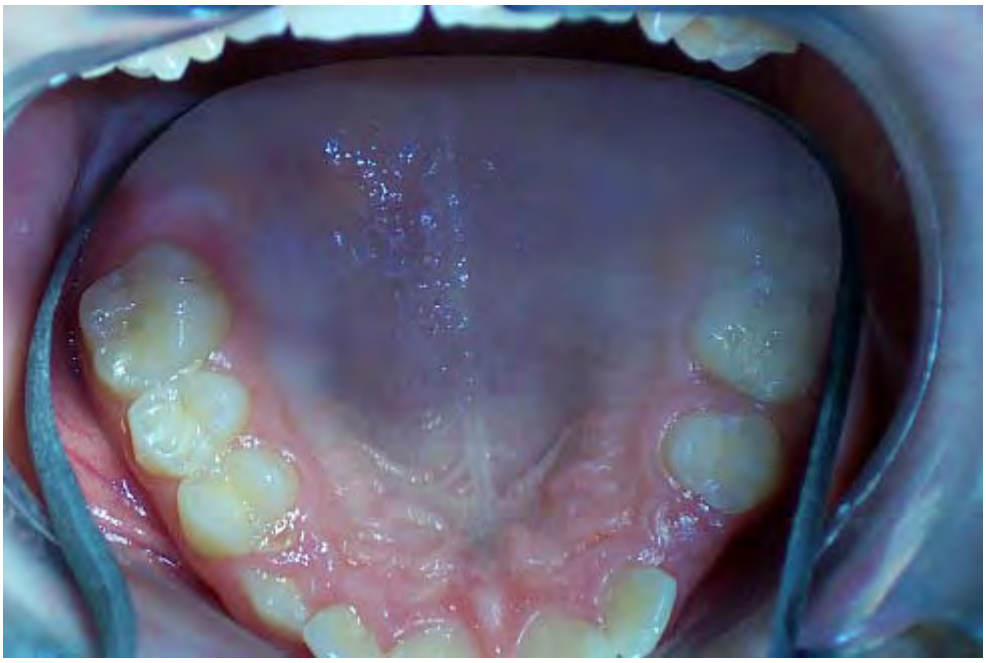


Fig. 3 Re. A. 18.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 4 Re. A. 08/2003 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Re. A. 08/2003 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Re. A. 08/2003 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Re. A. 07/2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Re. A. 07/2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Re. A. 07/2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Re. A. 05/2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Re. A. 05/2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Re. A. 05/2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Re. A. (11Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
07.10.2003	12 / Minute	Sidebending-Rotation Right	+			
06.11.2003	8 / Minute	Sidebending-Rotation Right	+			
20.01.2004	9 / Minute	Sidebending-Rotation Right	+			
06.05.2004	7/ Minute	Sidebending-Rotation Right	+			
15.07.2004	8 / Minute	Sidebending-Rotation Right	+			
15.09.2004	9 / Minute	Torsion Left	+			
02.12.2004	7/ Minute	Torsion Left	+			
31.03.2005	8 / Minute	Sidebending-Rotation Right	+			
14.07.2005	8 / Minute	Sidebending-Rotation Right	+			
18.08.2005	7 / Minute	Sidebending-Rotation Right	+			
20.09.2005	8 / Minute	Sidebending-Rotation Right	+			
18.10.2005	8 / Minute	Torsion Left	+			
10.11.2005	7 / Minute	Sidebending-Rotation Right	+			
23.03.2006	8 / Minute	Torsion Left	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 07.10.2003

Name: Re. A. (9 Years)			Research Group		
Remote X-Ray Analysis (07.10.2003)					
Facial Axis:	91.1°	(90°+/-3°)	Convexity:	0mm	(+2mm+/-2)
Facial Depth:	82.4°	(87°+/-3°)	1/1 to APO:	2.9mm	(+1mm+/-2)
Mandibular Plane:	27.3°	(26°+/-4°)	1/1 Inclination to APO:	21°	(22°+/-4°)
Conical Angle:	70.1°	(67°+/-4°)	1/1 to Occlusion-Plane:	"-2mm	(+1mm)
Lower Facial Height:	43.9°	(47°+/-4°)	Upper Molar to PTV:	8mm	Alter+3mm+/-2
Mandibular Arc:	34°	(27°+/-4°)	Condyloincisal Angle :	90.4°	(90°)
Maxillary Depth:	82.1°	(90°+/-3°)	Lower Lip to Est.-Plane:	0mm	(-2mm+/-2mm)
Corpus Axis:	59.2mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	66.5°	(76°+/-3°)	Porionlocalisation:	"- 35.5mm	(-39mm+/-2.2)
Craniale Deflexion:	21.6°	(27°+/-4°)	Ant.Cran. Base:	50mm	(55mm)
Posterior Fac.Height:	52.2mm	(55mm+/-3.3)	Palatinal Plane:	"-1°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	50.6°	(53°+/-3°)
Saddle Angle:	117°	(123°+/-5°)	Posterior Facial Height:	61.3mm	(55mm+/-3.3)
Articular Angle:	150°	(143mm+/-6°)	Anterior Facial Height:	97.1mm	(Na-Me)
Gonion Angle:	124°	(130°+/-7°)	Rel. Facial Height:	63.1%	(62-65% d. vord.)
Angle Sum:	391°	(396°+/-6°)	SN-Basion:	131°	(131°+/-4.5°)
Ant.Cr. Base Length:	66.7mm	(73mm+/- 3mm)	Pal. / Mand.Plane:	28.1°	(25°+/-6°)
Post.Cr. Base Length:	28.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	9.3°	(10°+/-4°)
Gonial Angle: (upper)	54.1°	(55°+/-2°)	Lower Occl.-Plane:	11.5°	(20°+/-5°)
Gonial Angle: (lower)	69.9°	(75°)	1-,-1 / Mand.Plane:	90.9°	(90°+/-3°)
Ramus Height:	34.8mm	(44mm+/-5)	1+,+1 / to SN:	105°	(102°+/-2°)
Body Length:	60.9mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	131°	(125°-130°)
SNA:	76.7°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	76.4°	(80°)	ANB Diff:	0.2°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 31.03.2005

Name: Re. A. (10 Years)			Research Group		
Remote X-Ray Analysis (31.03.2005)					
Facial Axis:	91°	(90°+/-3°)	Convexity:	"-2mm	(+2mm+/-2)
Facial Depth:	84.6°	(87°+/-3°)	1/1 to APO:	4.1mm	(+1mm+/-2)
Mandibular Plane:	22.4°	(26°+/-4°)	1/1 Inclination to APO:	28.6°	(22°+/-4°)
Conical Angle:	72.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.8mm	(+1mm)
Lower Facial Height:	42.6°	(47°+/-4°)	Upper Molar to PTV:	10.9mm	Alter+3mm+/-2
Mandibular Arc:	34.3°	(27°+/-4°)	Condyloincisal Angle:	81.9°	(90°)
Maxillary Depth:	82.4°	(90°+/-3°)	Lower Lip to Est.-Plane:	1.9mm	(-2mm+/-2mm)
Corpus Axis:	61.1mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-7mm	(-3.5mm)
Ramusposition:	70.9°	(76°+/-3°)	Porionlocalisation:	"- 28.5mm	(-39mm+/-2.2)
Craniale Deflexion:	26°	(27°+/-4°)	Ant.Cran. Base:	53.1mm	(55mm)
Posterior Fac.Height:	53.3mm	(55mm+/-3.3)	Palatinal Plane:	"- 3°	(-1°+/-3.5°)
Hellgreen:	"-6mm	(-3mm)	Maxillary Height:	51°	(53°+/-3°)
Saddle Angle:	118°	(123°+/-5°)	Posterior Facial Height:	63.4mm	(55mm+/-3.3)
Articular Angle:	150°	(143mm+/-6°)	Anterior Facial Height:	97.9mm	(Na-Me)
Gonion Angle:	121°	(130°+/-7°)	Rel. Facial Height:	64.8%	(62-65% d. vord.)
Angle Sum:	389°	(396°+/-6°)	SN-Basion:	126°	(131°+/-4.5°)
Ant.Cr. Base Length:	69.4mm	(73mm+/-3mm)	Pal. / Mand.Plane:	25.1°	(25°+/-6°)
Post.Cr. Base Length:	28.9mm	(37mm+/-3mm)	Upper Occl.-Plane:	12°	(10°+/-4°)
Gonial Angle: (upper)	54.4°	(55°+/-2°)	Lower Occl.-Plane:	12.8°	(20°+/-5°)
Gonial Angle: (lower)	66.6°	(75°)	1-,-1 / Mand.Plane:	99.4°	(90°+/-3°)
Ramus Height:	36.7mm	(44mm+/-5mm)	1+,+1 / to SN:	103°	(102°+/-2°)
Body Length:	63.1mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	127°	(125°-130°)
SNA:	74.7°	(82°+/-3,5)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	76.5°	(80°)	ANB Diff:	"-1.8°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 14.02.2006

Name: Re. A. (11 Years)			Research Group		
Remote X-Ray Analysis (14.02.2006)					
Facial Axis:	84.8°	(90°+/-3°)	Convexity:	"-1mm	(+2mm+/-2)
Facial Depth:	85.1°	(87°+/-3°)	1/1 to APO:	0.5mm	(+1mm+/-2)
Mandibular Plane:	26.6°	(26°+/-4°)	1/1 Inclination to APO:	22.7°	(22°+/-4°)
Conical Angle:	68.2°	(67°+/-4°)	1/1 to Occlusion-Plane:	1mm	(+1mm)
Lower Facial Height:	49.3°	(47°+/-4°)	Upper Molar to PTV:	8.6mm	Alter+3mm+/-2
Mandibular Arc:	35.3°	(27°+/-4°)	Condyloincisal Angle:	89.8°	(90°)
Maxillary Depth:	84.4°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-5mm	(-2mm+/-2mm)
Corpus Axis:	59.6mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	68.1°	(76°+/-3°)	Porionlocalisation:	"- 28.3mm	(-39mm+/-2.2)
Craniale Deflexion:	29.7°	(27°+/-4°)	Ant.Cran. Base:	54.5mm	(55mm)
Posterior Fac.Height:	52.4mm	(55mm+/-3.3)	Palatinal Plane:	"- 5°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	55.3°	(53°+/-3°)
Saddle Angle:	129°	(123°+/-5°)	Posterior Facial Height:	64.9mm	(55mm+/-3.3)
Articular Angle:	147°	(143mm+/-6°)	Anterior Facial Height:	109mm	(Na-Me)
Gonion Angle:	123°	(130°+/-7°)	Rel. Facial Height:	59.6%	(62-65% d. vord.)
Angle Sum:	399°	(396°+/-6°)	SN-Basion:	137°	(131°+/-4.5°)
Ant.Cr. Base Length:	63.8mm	(73mm+/-3mm)	Pal./Mand.Plane:	31.4°	(25°+/-6°)
Post.Cr. Base Length:	29.9mm	(37mm+/-3mm)	Upper Occl.-Plane:	13.4°	(10°+/-4°)
Gonial Angle: (upper)	48.2°	(55°+/-2°)	Lower Occl.-Plane:	17.3°	(20°+/-5°)
Gonial Angle: (lower)	74.8°	(75°)	1-,-1 / Mand.Plane:	90.3°	(90°+/-3°)
Ramus Height:	37.5mm	(44mm+/-5mm)	1+,+1 / to SN:	96.2°	(102°+/-2°)
Body Length:	63.8mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	133°	(125°-130°)
SNA:	70.9°	(82°+/-3,5)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	70.1°	(80°)	ANB Diff:	0.8°	(2°)

(Dr. Krenner Mauthausen 2006)

7.Patient: Lu. C.

Fig. 1 Lu. C. 18.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Lu. C. 18.10.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 3 Lu. C. 11-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Lu. C. 11-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Lu. C. 11-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Lu. C. 11-2004 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Lu. C. 11-2004 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Lu. C. 11-2004 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Lu. C. 11-2005 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Lu. C. 11-2005 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Lu. C. 11-2005 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Lu. C. 11-2006 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 13 Lu. C. 11-2006 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 14 Lu. C. 11-2006 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Lu. C. (10Jahre)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
21.10.2004	7/ Minute	Sidebending-Rotation Right	+			
25.11.2004	6/ Minute	Sidebending-Rotation Right	+			
16.12.2004	8/ Minute	Lateral Strain Right	+			
27.01.2005	7/ Minute	Sidebending-Rotation Right	+			
03.03.2005	7/ Minute	Sidebending-Rotation Right	+			
31.05.2005	7/ Minute	Sidebending-Rotation Right	+			
07.07.2005	8/ Minute	Sidebending-Rotation Right	+			
13.09.2005	8/ Minute	Sidebending-Rotation Right	+			
15.11.2005	7/ Minute	Sidebending-Rotation Right	+			
12.12.2005	7/ Minute	Sidebending-Rotation Right	+			
19.01.2006	8/ Minute	Sidebending-Rotation Right	+			
09.03.2006	8/ Minute	Sidebending-Rotation Right	+			
04.04.2006	8/ Minute	Sidebending-Rotation Right	+			
09.05.2006	8/ Minute	Sidebending-Rotation Right	+			
20.06.2006	7/ Minute	Sidebending-Rotation Right	+			
11.07.2006	7/ Minute	Sidebending-Rotation Right	+			
09.11.2006	8/ Minute	Sidebending-Rotation Right	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 25.11.2004

Name: Lu. C. (7 Years)			Research Group		
Remote X-Ray Analysis (25.11.2004)					
Facial Axis:	90.4°	(90°+/-3°)	Convexity:	"-1mm	(+2mm+/-2)
Facial Depth:	88.6°	(87°+/-3°)	1/1 to APO:	3.2mm	(+1mm+/-2)
Mandibular Plane:	23°	(26°+/-4°)	1/1 Inclination to APO:	27.1°	(22°+/-4°)
Conical Angle:	68.2°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.8mm	(+1mm)
Lower Facial Height:	44.7°	(47°+/-4°)	Upper Molar to PTV:	11.3mm	Alter+3mm+/-2
Mandibular Arc:	39.5°	(27°+/-4°)	Condyloincisal Angle:	87.6°	(90°)
Maxillary Depth:	87.9°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.4mm	(-2mm+/-2mm)
Corpus Axis:	59.9mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	74°	(76°+/-3°)	Porionlocalisation:	"- 35.2mm	(-39mm+/-2.2)
Craniale Deflexion:	29.3°	(27°+/-4°)	Ant.Cran. Base:	52.4mm	(55mm)
Posterior Fac.Height:	50.5mm	(55mm+/-3.3)	Palatinal Plane:	"-5°	(-1°+/-3.5°)
Hellgreen:	"-6mm	(-3mm)	Maxillary Height:	53°	(53°+/-3°)
Saddle Angle:	120°	(123°+/-5°)	Posterior Facial Height:	62.2mm	(55mm+/-3.3)
Articular Angle:	153°	(143mm+/-6°)	Anterior Facial Height:	99.4mm	(Na-Me)
Gonion Angle:	120°	(130°+/-7°)	Rel. Facial Height:	62.5%	(62-65% d. vord.)
Angle Sum:	393°	(396°+/-6°)	SN-Basion:	131°	(131°+/-4.5°)
Ant.Cr. Base Length:	63.9mm	(73mm+/-3mm)	Pal./Mand.Plane:	28°	(25°+/-6°)
Post.Cr. Base Length:	25mm	(37mm+/-3mm)	Upper Occl.-Plane:	12.8°	(10°+/-4°)
Gonial Angle: (upper)	48.7°	(55°+/-2°)	Lower Occl.-Plane:	15.1°	(20°+/-5°)
Gonial Angle: (lower)	71.3°	(75°)	1-,-1 / Mand.Plane:	94.7°	(90°+/-3°)
Ramus Height:	38.7mm	(44mm+/-5mm)	1+,+1 / to SN:	105°	(102°+/-2°)
Body Length:	62.9mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	125°	(125°-130°)
SNA:	76.7°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	76.9°	(80°)	ANB Diff:	"-0.3°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 15.11.2005

Name: Lu. C. (8 Years)			Research Group		
Remote X-Ray Analysis (15.11.2005)					
Facial Axis:	92.7°	(90°+/-3°)	Convexity:	"-1mm	(+2mm+/-2)
Facial Depth:	83.9°	(87°+/-3°)	1/1 to APO:	3.8mm	(+1mm+/-2)
Mandibular Plane:	26.3°	(26°+/-4°)	1/1 Inclination to APO:	25.9°	(22°+/-4°)
Conical Angle:	69.7°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.6mm	(+1mm)
Lower Facial Height:	46.5°	(47°+/-4°)	Upper Molar to PTV:	10mm	Alter+3mm+/-2
Mandibular Arc:	29.6°	(27°+/-4°)	Condyloincisal Angle:	87°	(90°)
Maxillary Depth:	82°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	61.7mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-4mm	(-3.5mm)
Ramusposition:	67.9°	(76°+/-3°)	Porionlocalisation:	"- 30.9mm	(-39mm+/-2.2)
Craniale Deflexion:	22°	(27°+/-4°)	Ant.Cran. Base:	53.1mm	(55mm)
Posterior Fac.Height:	52.3mm	(55mm+/-3.3)	Palatinal Plane:	0.1°	(-1°+/-3.5°)
Hellgreen:	"-8mm	(-3mm)	Maxillary Height:	53.6°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	66.3mm	(55mm+/-3.3)
Articular Angle:	145°	(143mm+/-6°)	Anterior Facial Height:	102mm	(Na-Me)
Gonion Angle:	124°	(130°+/-7°)	Rel. Facial Height:	65.2%	(62-65% d. vord.)
Angle Sum:	391°	(396°+/-6°)	SN-Basion:	132°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.3mm	(73mm+/-3mm)	Pal./Mand.Plane:	26.1°	(25°+/-6°)
Post.Cr. Base Length:	30.1mm	(37mm+/-3mm)	Upper Occl.-Plane:	13.5°	(10°+/-4°)
Gonial Angle: (upper)	53.1°	(55°+/-2°)	Lower Occl.-Plane:	13.2°	(20°+/-5°)
Gonial Angle: (lower)	70.9°	(75°)	1-,-1 / Mand.Plane:	93.9°	(90°+/-3°)
Ramus Height:	39.2mm	(44mm+/-5)	1+,+1 / to SN:	104°	(102°+/-2°)
Body Length:	63.2mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	129°	(125°-130°)
SNA:	76.4°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78°	(80°)	ANB Diff:	"-1.6°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 09.11.2005

Name: Lu. C. (9 Years)			Research Group		
Remote X-Ray Analysis (15.11.2005)					
Facial Axis:	91.7°	(90°+/-3°)	Convexity:	1.7mm	(+2mm+/-2)
Facial Depth:	80.2°	(87°+/-3°)	1/1 to APO:	2.8mm	(+1mm+/-2)
Mandibular Plane:	30.1°	(26°+/-4°)	1/1 Inclination to APO:	29.2°	(22°+/-4°)
Conical Angle:	69.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	45.6°	(47°+/-4°)	Upper Molar to PTV:	8.3mm	Alter+3mm+/-2
Mandibular Arc:	30.6°	(27°+/-4°)	Condyloincisal Angle:	80°	(90°)
Maxillary Depth:	82.4°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	61.8mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-1mm	(-3.5mm)
Ramusposition:	64.9°	(76°+/-3°)	Porionlocalisation:	"-33mm	(-39mm+/-2.2)
Craniale Deflexion:	19.4°	(27°+/-4°)	Ant.Cran. Base:	53.6mm	(55mm)
Posterior Fac.Height:	49.1mm	(55mm+/-3.3)	Palatinal Plane:	5.2°	(-1°+/-3.5°)
Hellgreen:	0.4mm	(-3mm)	Maxillary Height:	51.3°	(53°+/-3°)
Saddle Angle:	120°	(123°+/-5°)	Posterior Facial Height:	68.1mm	(55mm+/-3.3)
Articular Angle:	144°	(143°+/-6°)	Anterior Facial Height:	103mm	(Na-Me)
Gonion Angle:	125°	(130°+/-7°)	Rel. Facial Height:	66.1%	(62-65% d. vord.)
Angle Sum:	389°	(396°+/-6°)	SN-Basion:	129°	(131°+/-4.5°)
Ant.Cr. Base Length:	66.2mm	(73mm+/-3mm)	Pal./Mand.Plane:	24.9°	(25°+/-6°)
Post.Cr. Base Length:	31mm	(37mm+/-3mm)	Upper Occl.-Plane:	9°	(10°+/-4°)
Gonial Angle: (upper)	54.1°	(55°+/-2°)	Lower Occl.-Plane:	17.1°	(20°+/-5°)
Gonial Angle: (lower)	70.9°	(75°)	1-,-1 / Mand.Plane:	100°	(90°+/-3°)
Ramus Height:	40.3mm	(44mm+/-5mm)	1+,+1 / to SN:	106°	(102°+/-2°)
Body Length:	64.4mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	121°	(125°-130°)
SNA:	81.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78.9°	(80°)	ANB Diff:	2.5°	(2°)

(Dr. Krenner Mauthausen 2006)

8.Patient: St. M.

Fig. 1 St. M. 9.12.2004
(Photo Dr. Krenner Mauthausen 2004)

Fig. 2 St. M. 9.12.2004
(Photo Dr. Krenner Mauthausen 2004)

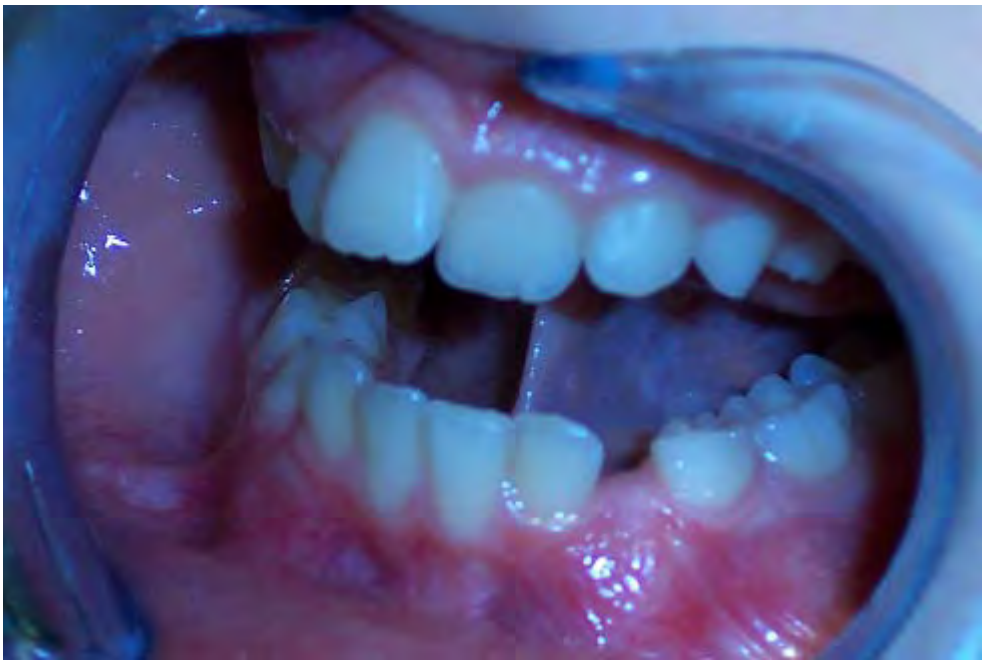


Fig. 3 St. M. 9.12.2004
(Photo Dr. Krenner Mauthausen 2004)

Fig. 4 St. M. 31.1.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 St. M. 31.1.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 St. M. 31.1.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 St. M. 17.10.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 St. M. 17.10.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 St. M. 17.10.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig.10 St. M. 12-2004
(Photo Dr. Krenner Mauthausen 2006)

Fig.11 St. M. 12- 2004
(Photo Dr. Krenner Mauthausen 2006)

Fig.12 St. M. 12- 2004
(Photo Dr. Krenner Mauthausen 2006)

Fig.13 St. M. 11- 2005
(Photo Dr. Krenner Mauthausen 2006)

Fig.14 St. M. 11- 2005
(Photo Dr. Krenner Mauthausen 2006)

Fig.15 St. M. 11- 2005
(Photo Dr. Krenner Mauthausen 2006)

Fig.16 St. M. 10- 2006
(Photo Dr. Krenner Mauthausen 2006)

Fig.17 St. M. 10-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig.18 St. M. 10-2006
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Sturm. M. (10 Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
09.12.2004	7/ Minute	Sidebending-Rotation Left			+	
11.01.2005	6/ Minute	Sidebending-Rotation Left			+	
10.02.2005	7/ Minute	Inferior Vertical Strain			+	
28.03.2005	7/ Minute	Inferior Vertical Strain			+	
19.04.2005	8/ Minute	Sidebending-Rotation Left			+	
09.06.2005	8/ Minute	Sidebending-Rotation Left			+	
19.07.2005	8/ Minute	Sidebending-Rotation Left			+	
29.08.2005	7/ Minute	Inferior Vertical Strain			+	
27.09.2005	7/ Minute	Sidebending-Rotation Left			+	
15.11.2005	7/ Minute	Sidebending-Rotation Left			+	
30.11.2005	7/ Minute	Sidebending-Rotation Left			+	
17.01.2006	8/ Minute	Sidebending-Rotation Left	+			
28.02.2006	8/ Minute	Inferior Vertical Strain	+			
04.04.2006	8/ Minute	Inferior Vertical Strain	+			
02.05.2006	7/ Minute	Inferior Vertical Strain	+			
30.05.2006	8/ Minute	Inferior Vertical Strain	+			
20.07.2006	8/ Minute	Inferior Vertical Strain	+			
07.09.2006	8/ Minute	Sidebending-Rotation Left	+			
17.10.2006	9/ Minute	Inferior Vertical Strain	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 29.11.2004

Name: St. M. (10 Years)			Research Group		
Remote X-Ray Analysis (29.11.2004)					
Facial Axis:	88.7°	(90°+/-3°)	Convexity:	0mm	(+2mm+/-2)
Facial Depth:	85.3°	(87°+/-3°)	1/1 to APO:	1.8mm	(+1mm+/-2)
Mandibular Plane:	19.3°	(26°+/-4°)	1/1 Inclination to APO:	21.6°	(22°+/-4°)
Conical Angle:	75.3°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.1mm	(+1mm)
Lower Facial Height:	42.1°	(47°+/-4°)	Upper Molar to PTV:	7.8mm	Alter+3mm+/-2
Mandibular Arc:	35.7°	(27°+/-4°)	Condyloincisal Angle :	88.7°	(90°)
Maxillary Depth:	85°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.2mm	(-2mm+/-2mm)
Corpus Axis:	58.6mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	68°	(76°+/-3°)	Porionlocalisation:	"- 34.8mm	(-39mm+/-2.2)
Craniale Deflexion:	27.8°	(27°+/-4°)	Ant.Cran. Base:	51.9mm	(55mm)
Posterior Fac.Height:	61mm	(55mm+/-3.3)	Palatinal Plane:	"-1°	(-1°+/-3.5°)
Hellgreen:	"-2mm	(-3mm)	Maxillary Height:	57.6°	(53°+/-3°)
Saddle Angle:	119°	(123°+/-5°)	Posterior Facial Height:	67.5mm	(55mm+/-3.3)
Articular Angle:	162°	(143mm+/-6°)	Anterior Facial Height:	98.4mm	(Na-Me)
Gonion Angle:	105°	(130°+/-7°)	Rel. Facial Height:	68.5%	(62-65% d. vord.)
Angle Sum:	386°	(396°+/-6°)	SN-Basion:	127°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.2mm	(73mm+/-3mm)	Pal. / Mand.Plane:	20.1°	(25°+/-6°)
Post.Cr. Base Length:	32.7mm	(37mm+/-3mm)	Upper Occl.-Plane:	11.9°	(10°+/-4°)
Gonial Angle: (upper)	42.7°	(55°+/-2°)	Lower Occl.-Plane:	11.3°	(20°+/-5°)
Gonial Angle: (lower)	62.3°	(75°)	1-,-1 / Mand.Plane:	96.7°	(90°+/-3°)
Ramus Height:	35.6mm	(44mm+/-5mm)	1+,+1 / to SN:	114°	(102°+/-2°)
Body Length:	68.7mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	121°	(125°-130°)
SNA:	77.3°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	76.5°	(80°)	ANB Diff:	0.7°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 16.12.2005

Name: St. M. (11 Years)			Research Group		
Remote X-Ray Analysis (26.12.2005)					
Facial Axis:	86.2°	(90°+/-3°)	Convexity:	0.1mm	(+2mm+/-2)
Facial Depth:	84.5°	(87°+/-3°)	1/1 to APO:	4.1mm	(+1mm+/-2)
Mandibular Plane:	21.5°	(26°+/-4°)	1/1 Inclination to APO:	30.5°	(22°+/-4°)
Conical Angle:	73.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	4mm	(+1mm)
Lower Facial Height:	44.8°	(47°+/-4°)	Upper Molar to PTV:	8.6mm	Alter+3mm+/-2
Mandibular Arc:	35.7°	(27°+/-4°)	Condyloincisal Angle:	79.4°	(90°)
Maxillary Depth:	84.7°	(90°+/-3°)	Lower Lip to Est.-Plane:	0mm	(-2mm+/-2mm)
Corpus Axis:	60.3mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	67.8°	(76°+/-3°)	Porionlocalisation:	"- 33.7mm	(-39mm+/-2.2)
Craniale Deflexion:	28.7°	(27°+/-4°)	Ant.Cran. Base:	54.5mm	(55mm)
Posterior Fac.Height:	61mm	(55mm+/-3.3)	Palatinal Plane:	"-3°	(-1°+/-3.5°)
Hellgreen:	"-5mm	(-3mm)	Maxillary Height:	61.3°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	69.5mm	(55mm+/-3.3)
Articular Angle:	158°	(143mm+/-6°)	Anterior Facial Height:	105mm	(Na-Me)
Gonion Angle:	110°	(130°+/-7°)	Rel. Facial Height:	66%	(62-65% d. vord.)
Angle Sum:	390°	(396°+/-6°)	SN-Basion:	130°	(131°+/-4.5°)
Ant.Cr. Base Length:	66.3mm	(73mm+/-3mm)	Pal./Mand.Plane:	24.2°	(25°+/-6°)
Post.Cr. Base Length:	32.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	15.6°	(10°+/-4°)
Gonial Angle: (upper)	43.4°	(55°+/-2°)	Lower Occl.-Plane:	13.2°	(20°+/-5°)
Gonial Angle: (lower)	66.6°	(75°)	1-,-1 / Mand.Plane:	104°	(90°+/-3°)
Ramus Height:	38.2mm	(44mm+/-5mm)	1+,+1 / to SN:	97.4°	(102°+/-2°)
Body Length:	66mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	126°	(125°-130°)
SNA:	74.8°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	73.9°	(80°)	ANB Diff:	0.8°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 07.11.2006

Name: St. M. (12 Years)			Research Group		
Remote X-Ray Analysis (07.11.2006)					
Facial Axis:	89.1°	(90°+/-3°)	Convexity:	1.9mm	(+2mm+/-2)
Facial Depth:	86.8°	(87°+/-3°)	1/1 to APO:	2.9mm	(+1mm+/-2)
Mandibular Plane:	18.2°	(26°+/-4°)	1/1 Inclination to APO:	27.7°	(22°+/-4°)
Conical Angle:	74.9°	(67°+/-4°)	1/1 to Occlusion-Plane:	1mm	(+1mm)
Lower Facial Height:	46.4°	(47°+/-4°)	Upper Molar to PTV:	11.6mm	Alter+3mm+/-2
Mandibular Arc:	39.6°	(27°+/-4°)	Condyloincisal Angle:	81.2°	(90°)
Maxillary Depth:	89.1°	(90°+/-3°)	Lower Lip to Est.-Plane:	0mm	(-2mm+/-2mm)
Corpus Axis:	61.2mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	73.5°	(76°+/-3°)	Porionlocalisation:	"-35.7mm	(-39mm+/-2.2)
Craniale Deflexion:	29.5°	(27°+/-4°)	Ant.Cran. Base:	54.5mm	(55mm)
Posterior Fac.Height:	62.2mm	(55mm+/-3.3)	Palatinal Plane:	"-6°	(-1°+/-3.5°)
Hellgreen:	"-1mm	(-3mm)	Maxillary Height:	53.1°	(53°+/-3°)
Saddle Angle:	119°	(123°+/-5°)	Posterior Facial Height:	71.2mm	(55mm+/-3.3)
Articular Angle:	161°	(143°+/-6°)	Anterior Facial Height:	102mm	(Na-Me)
Gonion Angle:	105°	(130°+/-7°)	Rel. Facial Height:	70%	(62-65% d. vord.)
Angle Sum:	385°	(396°+/-6°)	SN-Basion:	127°	(131°+/-4.5°)
Ant.Cr. Base Length:	65mm	(73mm+/-3mm)	Pal./Mand.Plane:	24.3°	(25°+/-6°)
Post.Cr. Base Length:	32.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	17.5°	(10°+/-4°)
Gonial Angle: (upper)	41.8°	(55°+/-2°)	Lower Occl.-Plane:	11°	(20°+/-5°)
Gonial Angle: (lower)	63.2°	(75°)	1-,-1 / Mand.Plane:	104°	(90°+/-3°)
Ramus Height:	39.6mm	(44mm+/-5mm)	1+,+1 / to SN:	105°	(102°+/-2°)
Body Length:	69.5mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	122°	(125°-130°)
SNA:	80.9°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	77.8°	(80°)	ANB Diff:	3.1°	(2°)

(Dr. Krenner Mauthausen 2006)

9.Patient: Di. C.

Fig. 1 Di. C. 24.08.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 2 Di. C. 24.08.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 3 Di. C. 24.08.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Di. C. 04-2004 (model of upper jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 5 Di. C. 04-2004 (model of lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 6 Di. C. 04-2004 (model of upper and lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 7 Di. C. 08-2005 (model of upper jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 8 Di. C. 08-2005 (model of lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 9 Di. C. 08-2005 (model of upper and lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 10 Di. C. 04-2006 (model of upper jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 11 Di. C. 04-2006 (model of lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 12 Di. C. 04-2006 (model of upper and lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Di. C. (9 Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS-Lesion:	Class I	Class II/1	Class II/2	Class III
30.03.2004	8/ Minute	Superior Vertical Strain			+	
06.04.2004	8/ Minute	Superior Vertical Strain			+	
29.06.2004	7/ Minute	Superior Vertical Strain			+	
16.09.2004	7/ Minute	Superior Vertical Strain			+	
18.11.2004	8/ Minute	Superior Vertical Strain			+	
16.12.2004	8/ Minute	Superior Vertical Strain			+	
03.02.2005	7/ Minute	Superior Vertical Strain			+	
29.03.2005	7/ Minute	Superior Vertical Strain			+	
05.04.2005	8 Minute	Superior Vertical Strain			+	
24.05.2005	7/ Minute	Superior Vertical Strain			+	
30.06.2005	8/ Minute	Superior Vertical Strain			+	
18.08.2005	8/ Minute	Superior Vertical Strain	+			
01.09.2005	8/ Minute	Superior Vertical Strain	+			
02.11.2005	8/ Minute	Superior Vertical Strain	+			
13.12.2005	7/ Minute	Superior Vertical Strain	+			
02.02.2006	8/ Minute	Superior Vertical Strain	+			
30.03.2006	8/ Minute	Superior Vertical Strain	+			
10.04.2006	8/ Minute	Superior Vertical Strain	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 06.04.2004

Name: Di. C. (6 Years)			Research Group		
Remote X-Ray Analysis (06.04.2004)					
Facial Axis:	90.9°	(90°+/-3°)	Convexity:	2.7mm	(+2mm+/-2)
Facial Depth:	85.6°	(87°+/-3°)	1/1 to APO:	1.2mm	(+1mm+/-2)
Mandibular Plane:	23.9°	(26°+/-4°)	1/1 Inclination to APO:	19.1°	(22°+/-4°)
Conical Angle:	70.3°	(67°+/-4°)	1/1 to Occlusion-Plane:	"-2mm	(+1mm)
Lower Facial Height:	41.6°	(47°+/-4°)	Upper Molar to PTV:	12mm	Alter+3mm+/-2
Mandibular Arc:	30.7°	(27°+/-4°)	Condyloincisal Angle:	83.6°	(90°)
Maxillary Depth:	88.8°	(90°+/-3°)	Lower Lip to Est.-Plane:	1mm	(-2mm+/-2mm)
Corpus Axis:	58.4mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	2.5mm	(-3.5mm)
Ramusposition:	72.3°	(76°+/-3°)	Porionlocalisation:	"- 35mm	(-39mm+/-2.2)
Craniale Deflexion:	27.6°	(27°+/-4°)	Ant.Cran. Base:	54.6mm	(55mm)
Posterior Fac.Height:	49mm	(55mm+/-3.3)	Palatinal Plane:	"-6°	(-1°+/-3.5°)
Hellgreen:	0mm	(-3mm)	Maxillary Height:	55.4°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	62.4mm	(55mm+/-3.3)
Articular Angle:	140°	(143°+/-6°)	Anterior Facial Height:	98.1mm	(Na-Me)
Gonion Angle:	130°	(130°+/-7°)	Rel. Facial Height:	63.6%	(62-65% d. vord.)
Angle Sum:	392°	(396°+/-6°)	SN-Basion:	131°	(131°+/-4.5°)
Ant.Cr. Base Length:	67.9mm	(73mm+/-3mm)	Pal./Mand.Plane:	29.7°	(25°+/-6°)
Post.Cr. Base Length:	30.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	17.8°	(10°+/-4°)
Gonial Angle: (upper)	59.5°	(55°+/-2°)	Lower Occl.-Plane:	17.8°	(20°+/-5°)
Gonial Angle: (lower)	70.5°	(75°)	1-,-1 / Mand.Plane:	93.1°	(90°+/-3°)
Ramus Height:	35.7mm	(44mm+/-5mm)	1+,+1 / to SN:	109°	(102°+/-2°)
Body Length:	57.2mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	123°	(125°-130°)
SNA:	79.4°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	76°	(80°)	ANB Diff:	3.4°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 21.08.2005

Name: Di. C. (8Years)			Research Group		
Remote X-Ray Analysis (21.08.2005)					
Facial Axis:	90.7°	(90°+/-3°)	Convexity:	2.1mm	(+2mm+/-2)
Facial Depth:	88.2°	(87°+/-3°)	1/1 to APO:	1.6mm	(+1mm+/-2)
Mandibular Plane:	24.3°	(26°+/-4°)	1/1 Inclination to APO:	16.1°	(22°+/-4°)
Conical Angle:	67.4°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.4mm	(+1mm)
Lower Facial Height:	40°	(47°+/-4°)	Upper Molar to PTV:	14mm	Alter+3mm+/-2
Mandibular Arc:	37.1°	(27°+/-4°)	Condyloincisal Angle:	90.2°	(90°)
Maxillary Depth:	90.7°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.2mm	(-2mm+/-2mm)
Corpus Axis:	62.7mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-4mm	(-3.5mm)
Ramusposition:	73.4°	(76°+/-3°)	Porionlocalisation:	"- 28.7mm	(-39mm+/-2.2)
Craniale Deflexion:	29.9°	(27°+/-4°)	Ant.Cran. Base:	55.9mm	(55mm)
Posterior Fac.Height:	48.1mm	(55mm+/-3.3)	Palatinal Plane:	"-8°	(-1°+/-3.5°)
Hellgreen:	"-2mm	(-3mm)	Maxillary Height:	52.1°	(53°+/-3°)
Saddle Angle:	119°	(123°+/-5°)	Posterior Facial Height:	62.2mm	(55mm+/-3.3)
Articular Angle:	142°	(143mm+/-6°)	Anterior Facial Height:	101mm	(Na-Me)
Gonion Angle:	132°	(130°+/-7°)	Rel. Facial Height:	61.3%	(62-65% d. vord.)
Angle Sum:	393°	(396°+/-6)	SN-Basion:	127°	(131°+/-4.5°)
Ant.Cr. Base Length:	68.8mm	(73mm+/-3mm)	Pal./Mand.Plane:	32.5°	(25°+/-6°)
Post.Cr. Base Length:	34.1mm	(37mm+/-3mm)	Upper Occl.-Plane:	18.4°	(10°+/-4°)
Gonial Angle: (upper)	61.2°	(55°+/-2°)	Lower Occl.-Plane:	19.3°	(20°+/-5°)
Gonial Angle: (lower)	70.8°	(75°)	1-,-1 / Mand.Plane:	86.3°	(90°+/-3°)
Ramus Height:	31.6mm	(44mm+/-5mm)	1+,+1 / to SN:	102°	(102°+/-2°)
Body Length:	64.1mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	136°	(125°-130°)
SNA:	80.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78.2°	(80°)	ANB Diff:	2.2°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 24.08.2006

Name: Di. C. (9 Years)			Research Group		
Remote X-Ray Analysis (24.08.2006)					
Facial Axis:	90.3°	(90°+/-3°)	Convexity:	1.3mm	(+2mm+/-2)
Facial Depth:	83°	(87°+/-3°)	1/1 to APO:	3.7mm	(+1mm+/-2)
Mandibular Plane:	30.2°	(26°+/-4°)	1/1 Inclination to APO:	27.4°	(22°+/-4°)
Conical Angle:	66.6°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.6mm	(+1mm)
Lower Facial Height:	45.5°	(47°+/-4°)	Upper Molar to PTV:	10.9mm	Alter+3mm+/-2
Mandibular Arc:	29.1°	(27°+/-4°)	Condyloincisal Angle:	79°	(90°)
Maxillary Depth:	84.4°	(90°+/-3°)	Lower Lip to Est.-Plane:	1.9mm	(-2mm+/-2mm)
Corpus Axis:	61.7mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-5mm	(-3.5mm)
Ramusposition:	70.4°	(76°+/-3°)	Porionlocalisation:	"-35mm	(-39mm+/-2.2)
Craniale Deflexion:	24.5°	(27°+/-4°)	Ant.Cran. Base:	58.4mm	(55mm)
Posterior Fac.Height:	49mm	(55mm+/-3.3)	Palatinal Plane:	"-3mm	(-1°+/-3.5°)
Hellgreen:	"-2mm	(-3mm)	Maxillary Height:	55.8°	(53°+/-3°)
Saddle Angle:	123°	(123°+/-5°)	Posterior Facial Height:	65.7mm	(55mm+/-3.3)
Articular Angle:	139°	(143mm+/-6°)	Anterior Facial Height:	108mm	(Na-Me)
Gonion Angle:	134°	(130°+/-7°)	Rel. Facial Height:	60.8%	(62-65% d. vord.)
Angle Sum:	396°	(396°+/-6°)	SN-Basion:	133°	(131°+/-4.5°)
Ant.Cr. Base Length:	69.6mm	(73mm+/-3mm)	Pal./Mand.Plane:	33.5°	(25°+/-6°)
Post.Cr. Base Length:	34mm	(37mm+/-3mm)	Upper Occl.-Plane:	17.6°	(10°+/-4°)
Gonial Angle: (upper)	59.5°	(55°+/-2°)	Lower Occl.-Plane:	18.6°	(20°+/-5°)
Gonial Angle: (lower)	74.5°	(75°)	1-,-1 / Mand.Plane:	95.6°	(90°+/-3°)
Ramus Height:	35.8mm	(44mm+/-5)	1+,+1 / to SN:	105°	(102°+/-2°)
Body Length:	63.1mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	121°	(125°-130°)
SNA:	77.2°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	75.2°	(80°)	ANB Diff:	2	(2°)

(Dr. Krenner Mauthausen 2006)

10.Patient: Ma. D.

Fig. 1 Ma. D. 28.08.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 2 Ma. D. 28.08.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 3 Ma. D. 08.08.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Ma. D. 08-2004 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Ma. D. 08-2004 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ma. D. 08-2004 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Ma. D. 09-2005 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Ma. D. 09-2005 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Ma. D. 09-2005 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Ma. D. 08-2006 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Ma. D. 08-2006 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Ma. D. 08-2006 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Ma. D. (9Years)		Research Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
14.10.2004	7/ Minute	Torsion Left			+	
16.11.2004	7/ Minute	Torsion Left			+	
18.01.2005	8/ Minute	Torsion Left			+	
15.02.2005	7/ Minute	Torsion Left			+	
04.04.2005	7/ Minute	Torsion Left			+	
10.05.2005	8/ Minute	Torsion Left			+	
14.06.2005	8/ Minute	Torsion Left			+	
13.07.2005	8/ Minute	Torsion Left			+	
24.08.2005	8/ Minute	Torsion Left			+	
20.09.2005	7/ Minute	Torsion Left			+	
15.11.2005	7/ Minute	Torsion Left			+	
06.12.2005	7/ Minute	Torsion Left			+	
17.01.2006	8/ Minute	Torsion Left			+	
14.03.2006	8/ Minute	Torsion Left			+	
11.04.2006	7/ Minute	Torsion Left			+	
09.05.2006	8/ Minute	Torsion Left			+	
27.06.2006	7/ Minute	Torsion Left			+	
22.08.2006	7/ Minute	Torsion Left			+	
26.09.2006	7/ Minute	Torsion Left			+	

(Dr. Krenner Mauthausen 2006)

1. Analysis - 14.10.2004

Name: Ma. D. (7 Years)			Research Group		
Remote X-Ray Analysis (14.10.2004)					
Facial Axis:	86.1°	(90°+/-3°)	Convexity:	3.2mm	(+2mm+/-2)
Facial Depth:	81°	(87°+/-3°)	1/1 to APO:	1.8mm	(+1mm+/-2)
Mandibular Plane:	29.8°	(26°+/-4°)	1/1 Inclination to APO:	21.3°	(22°+/-4°)
Conical Angle:	69°	(67°+/-4°)	1/1 to Occlusion-Plane:	2mm	(+1mm)
Lower Facial Height:	48.4°	(47°+/-4°)	Upper Molar to PTV:	11mm	Alter+3mm+/-2
Mandibular Arc:	32°	(27°+/-4°)	Condyloincisal Angle :	84.5°	(90°)
Maxillary Depth:	84.8°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-3mm	(-2mm+/-2mm)
Corpus Axis:	56.5mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	72.1°	(76°+/-3°)	Porionlocalisation:	"- 29.1mm	(-39mm+/-2.2)
Craniale Deflexion:	27.7°	(27°+/-4°)	Ant.Cran. Base:	56.4mm	(55mm)
Posterior Fac.Height:	47.3mm	(55mm+/-3.3)	Palatinal Plane:	"- 4°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	52.7°	(53°+/-3°)
Saddle Angle:	115°	(123°+/-5°)	Posterior Facial Height:	65mm	(55mm+/-3.3)
Articular Angle:	151°	(143mm+/-6°)	Anterior Facial Height:	102mm	(Na-Me)
Gonion Angle:	129°	(130°+/-7°)	Rel. Facial Height:	63.8%	(62-65% d. vord.)
Angle Sum:	395°	(396°+/-6°)	SN-Basion:	124°	(131°+/-4.5°)
Ant.Cr. Base Length:	64.7mm	(73mm+/-3mm)	Pal. / Mand.Plane:	34°	(25°+/-6°)
Post.Cr. Base Length:	31.8mm	(37mm+/-3mm)	Upper Occl.-Plane:	19.5°	(10°+/-4°)
Gonial Angle: (upper)	53.1°	(55°+/-2°)	Lower Occl.-Plane:	12.2°	(20°+/-5°)
Gonial Angle: (lower)	75.9°	(75°)	1-,-1 / Mand.Plane:	94.2°	(90°+/-3°)
Ramus Height:	35.2mm	(44mm+/-5mm)	1+,+1 / to SN:	102°	(102°+/-2°)
Body Length:	54.3mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	126°	(125°-130°)
SNA:	78°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	73.3°	(80°)	ANB Diff:	4.7°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 21.09.2005

Name: Ma. D. (8 Years)			Research Group		
Remote X-Ray Analysis (21.09.2005)					
Facial Axis:	82°	(90°+/-3°)	Convexity:	2.7mm	(+2mm+/-2)
Facial Depth:	82.9°	(87°+/-3°)	1/1 to APO:	3.4mm	(+1mm+/-2)
Mandibular Plane:	30.6°	(26°+/-4°)	1/1 Inclination to APO:	21.8°	(22°+/-4°)
Conical Angle:	66.4°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	54.3°	(47°+/-4°)	Upper Molar to PTV:	12.2mm	Alter+3mm+/-2
Mandibular Arc:	36.4°	(27°+/-4°)	Condyloincisal Angle:	89.3°	(90°)
Maxillary Depth:	86°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	54.4mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-8mm	(-3.5mm)
Ramusposition:	77.7°	(76°+/-3°)	Porionlocalisation:	"- 27.2mm	(-39mm+/-2.2)
Craniale Deflexion:	30.5°	(27°+/-4°)	Ant.Cran. Base:	55.8mm	(55mm)
Posterior Fac.Height:	53.3mm	(55mm+/-3.3)	Palatinal Plane:	"- 6°	(-1°+/-3.5°)
Hellgreen:	"-6mm	(-3mm)	Maxillary Height:	54.2°	(53°+/-3°)
Saddle Angle:	118°	(123°+/-5°)	Posterior Facial Height:	66.7mm	(55mm+/-3.3)
Articular Angle:	154°	(143mm+/-6°)	Anterior Facial Height:	110mm	(Na-Me)
Gonion Angle:	128°	(130°+/-7°)	Rel. Facial Height:	60.7%	(62-65% d. vord.)
Angle Sum:	400°	(396°+/-6°)	SN-Basion:	125°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.5mm	(73mm+/-3mm)	Pal. / Mand.Plane:	36.4°	(25°+/-6°)
Post.Cr. Base Length:	30.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	14.3°	(10°+/-4°)
Gonial Angle: (upper)	49°	(55°+/-2°)	Lower Occl.-Plane:	11.2°	(20°+/-5°)
Gonial Angle: (lower)	79°	(75°)	1-,-1 / Mand.Plane:	91.1°	(90°+/-3°)
Ramus Height:	37.8mm	(44mm+/-5mm)	1+,+1 / to SN:	103°	(102°+/-2°)
Body Length:	58.4mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	124°	(125°-130°)
SNA:	75.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	72.2°	(80°)	ANB Diff:	3.2°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 26.09.2006

Name: Ma. D. (9 Years)			Research Group		
Remote X-Ray Analysis (26.09.2006)					
Facial Axis:	83.6°	(90°+/-3°)	Convexity:	2.5mm	(+2mm+/-2)
Facial Depth:	79.2°	(87°+/-3°)	1/1 to APO:	5mm	(+1mm+/-2)
Mandibular Plane:	34°	(26°+/-4°)	1/1 Inclination to APO:	23.3°	(22°+/-4°)
Conical Angle:	66.7°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.5mm	(+1mm)
Lower Facial Height:	56.4°	(47°+/-4°)	Upper Molar to PTV:	10.5mm	Alter+3mm+/-2
Mandibular Arc:	26°	(27°+/-4°)	Condyloincisal Angle:	85.9°	(90°)
Maxillary Depth:	82.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	0mm	(-2mm+/-2mm)
Corpus Axis:	59.4mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-9mm	(-3.5mm)
Ramusposition:	72.1°	(76°+/-3°)	Porionlocalisation:	"-29.3mm	(-39mm+/-2.2)
Craniale Deflexion:	25.7°	(27°+/-4°)	Ant.Cran. Base:	55.7mm	(55mm)
Posterior Fac.Height:	50.8mm	(55mm+/-3.3)	Palatinal Plane:	"-2°	(-1°+/-3.5°)
Hellgreen:	"-6mm	(-3mm)	Maxillary Height:	51.7°	(53°+/-3°)
Saddle Angle:	113°	(123°+/-5°)	Posterior Facial Height:	66mm	(55mm+/-3.3)
Articular Angle:	161°	(143°+/-6°)	Anterior Facial Height:	109mm	(Na-Me)
Gonion Angle:	123°	(130°+/-7°)	Rel. Facial Height:	60.7%	(62-65% d. vord.)
Angle Sum:	397°	(396°+/-6°)	SN-Basion:	122°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.9mm	(73mm+/-3mm)	Pal./Mand.Plane:	36.2°	(25°+/-6°)
Post.Cr. Base Length:	32mm	(37mm+/-3mm)	Upper Occl.-Plane:	17.3°	(10°+/-4°)
Gonial Angle: (upper)	46.8°	(55°+/-2°)	Lower Occl.-Plane:	13.5°	(20°+/-5°)
Gonial Angle: (lower)	76.2°	(75°)	1-,-1 / Mand.Plane:	92.5°	(90°+/-3°)
Ramus Height:	34.8mm	(44mm+/-5mm)	1+,+1 / to SN:	106°	(102°+/-2°)
Body Length:	63.3mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	122°	(125°-130°)
SNA:	77.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	73.7°	(80°)	ANB Diff:	3.7°	(2°)

(Dr. Krenner Mauthausen 2006)

11.5) Control group:

1.Patient: Ab. E.

Fig. 1 Ab. E. 07.06.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Ab. E. 07.06.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 3 Ab. E. 07.06.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 4 Ab. E. 01-2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Ab. E. 01-2004 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ab. E. 01-2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Ab. E. 06-2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Ab. E. 06-2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Ab. E. 06-2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Ab. E. 06-2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Ab. E. 06-2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Ab. E. 06-2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Ab. E. (11Years)		Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
29.01.2004	7 / Minute	Torsion Left			+	
20.04.2004	7 / Minute	Torsion Left			+	
17.05.2004	8 / Minute	Torsion Left			+	
19.08.2004	7/ Minute	Torsion Left			+	
02.11.2004	7 / Minute	Torsion Left			+	
17.02.2005	8 / Minute	Torsion Left			+	
03.03.2005	8 / Minute	Torsion Left			+	
07.06.2005	7 / Minute	Torsion Left			+	
29.08.2005	7/ Minute	Torsion Left	+			
27.10.2005	7 / Minute	Torsion Left	+			
29.11.2005	8 / Minute	Torsion Left	+			
02.02.2006	8 / Minute	Torsion Left	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 20.01.2004

Name: Ab. E. (8 Years)			Controlgroup		
Remote X-Ray Analysis (20.01.2004)					
Facial Axis:	84°	(90°+/-3°)	Convexity:	6.1mm	(+2mm+/-2)
Facial Depth:	82.7°	(87°+/-3°)	1/1 to APO:	2.1mm	(+1mm+/-2)
Mandibular Plane:	24.8°	(26°+/-4°)	1/1 Inclination to APO:	16°	(22°+/-4°)
Conical Angle:	72.4°	(67°+/-4°)	1/1 to Occlusion-Plane:	2mm	(+1mm)
Lower Facial Height:	47.8°	(47°+/-4°)	Upper Molar to PTV:	8.4mm	Alter+3mm+/-2
Mandibular Arc:	30°	(27°+/-4°)	Condyloincisal Angle :	85.7°	(90°)
Maxillary Depth:	89.5°	(90°+/-3°)	Lower Lip to Est.-Plane:	"2.9mm	(-2mm+/-2mm)
Corpus Axis:	63.1mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-4mm	(-3.5mm)
Ramusposition:	63.8°	(76°+/-3°)	Porionlocalisation:	"- 35.4mm	(-39mm+/-2.2)
Craniale Deflexion:	27.5°	(27°+/-4°)	Ant.Cran. Base:	52.4mm	(55mm)
Posterior Fac.Height:	57.4mm	(55mm+/-3.3)	Palatinal Plane:	"- 1°	(-1°+/-3.5°)
Hellgreen:	1.5mm	(-3mm)	Maxillary Height:	56.9°	(53°+/-3°)
Saddle Angle:	114°	(123°+/-5°)	Posterior Facial Height:	71.1mm	(55mm+/-3.3)
Articular Angle:	155°	(143°+/-6°)	Anterior Facial Height:	106mm	(Na-Me)
Gonion Angle:	120°	(130°+/-7°)	Rel. Facial Height:	66.9%	(62-65% d. vord.)
Angle Sum:	389°	(396°+/-6°)	SN-Basion:	122°	(131°+/-4.5°)
Ant.Cr. Base Length:	70mm	(73mm+/-3mm)	Pal. / Mand.Plane:	25.8°	(25°+/-6°)
Post.Cr. Base Length:	36.1mm	(37mm+/-3mm)	Upper Occl.-Plane:	16°	(10°+/-4°)
Gonial Angle: (upper)	50.9°	(55°+/-2°)	Lower Occl.-Plane:	12.1°	(20°+/-5°)
Gonial Angle: (lower)	69.1°	(75°)	1-,-1 / Mand.Plane:	95°	(90°+/-3°)
Ramus Height:	36.6mm	(44mm+/-5mm)	1+,+1 / to SN:	97.8°	(102°+/-2°)
Body Length:	63.9mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	136°	(125°-130°)
SNA:	83.9°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	76°	(80°)	ANB Diff:	7.9°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 29.08.2005

Name: Ab. E. (10 Years)			**Control Group**		
Remote X-Ray Analysis (29.08.2005)					
Facial Axis:	84.8°	(90°+/-3°)	Convexity:	4.9mm	(+2mm+/-2)
Facial Depth:	81.8°	(87°+/-3°)	1/1 to APO:	2.6mm	(+1mm+/-2)
Mandibular Plane:	27.4°	(26°+/-4°)	1/1 Inclination to APO:	18.1°	(22°+/-4°)
Conical Angle:	70.7°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.7mm	(+1mm)
Lower Facial Height:	45.4°	(47°+/-4°)	Upper Molar to PTV:	11.7mm	Alter+3mm+/-2
Mandibular Arc:	30.2°	(27°+/-4°)	Condyloincisal Angle:	84.5°	(90°)
Maxillary Depth:	87°	(90°+/-3°)	Lower Lip to Est.-Plane:	"0.9mm	(-2mm+/-2mm)
Corpus Axis:	63.7mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	69.5°	(76°+/-3°)	Porionlocalisation:	"- 35.6mm	(-39mm+/-2.2)
Craniale Deflexion:	27.6°	(27°+/-4°)	Ant.Cran. Base:	57.6mm	(55mm)
Posterior Fac.Height:	57.5mm	(55mm+/-3.3)	Palatinal Plane:	"0°	(-1°+/-3.5°)
Hellgreen:	0mm	(-3mm)	Maxillary Height:	55.4°	(53°+/-3°)
Saddle Angle:	114°	(123°+/-5°)	Posterior Facial Height:	73.3mm	(55mm+/-3.3)
Articular Angle:	157°	(143°+/-6°)	Anterior Facial Height:	111mm	(Na-Me)
Gonion Angle:	119°	(130°+/-7°)	Rel. Facial Height:	66%	(62-65% d. vord.)
Angle Sum:	390°	(396°+/-6°)	SN-Basion:	122°	(131°+/-4.5°)
Ant.Cr. Base Length:	71.1mm	(73mm+/-3mm)	Pal. / Mand.Plane:	27.7°	(25°+/-6°)
Post.Cr. Base Length:	36.6mm	(37mm+/-3mm)	Upper Occl.-Plane:	16.3°	(10°+/-4°)
Gonial Angle: (upper)	49.2°	(55°+/-2°)	Lower Occl.-Plane:	14.2°	(20°+/-5°)
Gonial Angle: (lower)	69.8°	(75°)	1-,-1 / Mand.Plane:	94.4°	(90°+/-3°)
Ramus Height:	38.1mm	(44mm+/-5mm)	1+,+1 / to SN:	101°	(102°+/-2°)
Body Length:	70.3mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	133°	(125°-130°)
SNA:	83.4°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	77.5°	(80°)	ANB Diff:	5.9°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 29.06.2006

Name: Ab. E. (11Years)			Control Group		
Remote X-Ray Analysis (29.06.2006)					
Facial Axis:	87.2°	(90°+/-3°)	Convexity:	0.3mm	(+2mm+/-2)
Facial Depth:	81.4°	(87°+/-3°)	1/1 to APO:	6mm	(+1mm+/-2)
Mandibular Plane:	32.9°	(26°+/-4°)	1/1 Inclination to APO:	26.9°	(22°+/-4°)
Conical Angle:	65.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.3mm	(+1mm)
Lower Facial Height:	45.4°	(47°+/-4°)	Upper Molar to PTV:	12.1mm	Alter+3mm+/-2
Mandibular Arc:	20.4°	(27°+/-4°)	Condyloincisal Angle:	80.9°	(90°)
Maxillary Depth:	81.7°	(90°+/-3°)	Lower Lip to Est.-Plane:	2.6mm	(-2mm+/-2mm)
Corpus Axis:	71.5mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	63.2°	(76°+/-3°)	Porionlocalisation:	"- 31.7mm	(-39mm+/-2.2)
Craniale Deflexion:	25.1°	(27°+/-4°)	Ant.Cran. Base:	59.2mm	(55mm)
Posterior Fac.Height:	52.2mm	(55mm+/-3.3)	Palatinal Plane:	"- 3°	(-1°+/-3.5°)
Hellgreen:	"-4mm	(-3mm)	Maxillary Height:	54.8°	(53°+/-3°)
Saddle Angle:	114°	(123°+/-5°)	Posterior Facial Height:	68mm	(55mm+/-3.3)
Articular Angle:	153°	(143°+/-6°)	Anterior Facial Height:	113mm	(Na-Me)
Gonion Angle:	128°	(130°+/-7°)	Rel. Facial Height:	60.3%	(62-65% d. vord.)
Angle Sum:	395°	(396°+/-6°)	SN-Basion:	126°	(131°+/-4.5°)
Ant.Cr. Base Length:	72.2mm	(73mm+/- 3mm)	Pal./Mand.Plane:	35.8°	(25°+/-6°)
Post.Cr. Base Length:	38.2mm	(37mm+/-3mm)	Upper Occl.-Plane:	19.5°	(10°+/-4°)
Gonial Angle: (upper)	54.7°	(55°+/-2°)	Lower Occl.-Plane:	20.1°	(20°+/-5°)
Gonial Angle: (lower)	73.3°	(75°)	1-,-1 / Mand.Plane:	92.8°	(90°+/-3°)
Ramus Height:	31.7°	(44mm+/-5mm)	1+,+1 / to SN:	104°	(102°+/-2°)
Body Length:	72.2°	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	126°	(125°-130°)
SNA:	78.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	77.7°	(80°)	ANB Diff:	0.7°	(2°)

(Dr. Krenner Mauthausen 2006)

2.Patient: La. P.

Fig. 1 La. P. 11-2006
(Photo Dr. Krenner Mauthausen 2006)

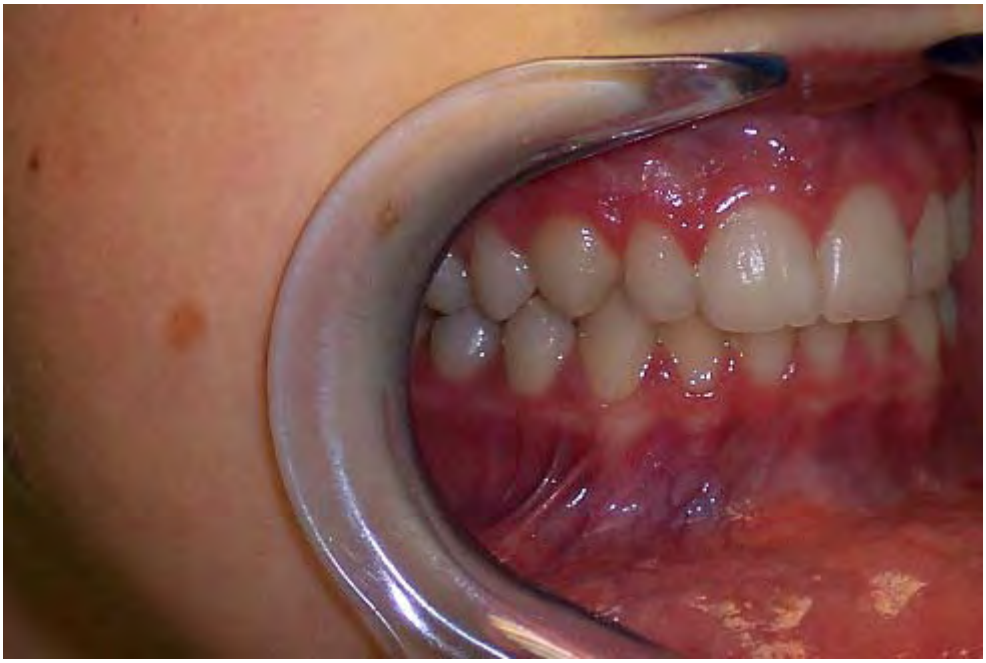


Fig. 2 La. P. 11-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 3 La. P. 11-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 La. P. 06-2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 La. P. 06-2004 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 La. P. 06-2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 La. P. 06-2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 La. P. 06-2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 La. P. 06-2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 La. P. 04-2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 La. P. 04-2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 La. P. 04-2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: La. P. (11Years)		Controlgroup	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS-Lesion:	Class I	Class II/1	Class II/2	Class III
08.01.2004	8/ Minute	Sidebending-Rotation Right			+	
23.03.2004	7/ Minute	Sidebending-Rotation Right			+	
20.04.2004	8/ Minute	Sidebending-Rotation Right			+	
03.06.2004	7/ Minute	Sidebending-Rotation Right			+	
17.08.2004	7/ Minute	Sidebending-Rotation Right			+	
14.10.2004	9/ Minute	Sidebending-Rotation Right			+	
16.12.2004	9/ Minute	Sidebending-Rotation Right			+	
25.01.2005	7/ Minute	Sidebending-Rotation Right			+	
24.03.2005	7/ Minute	Sidebending-Rotation Right			+	
21.04.2005	8/ Minute	Sidebending-Rotation Right			+	
13.06.2005	8/ Minute	Sidebending-Rotation Right			+	
30.08.2005	7/ Minute	Sidebending-Rotation Right			+	
27.09.2005	8/ Minute	Sidebending-Rotation Right			+	
30.11.2005	8/ Minute	Sidebending-Rotation Right			+	

(Dr. Krenner Mauthausen 2006)

1. Analysis - 08.01.2004

Name: La. P. (9Years)			Control Group		
Remote X-Ray Analysis (08.01.2004)					
Facial Axis:					
Facial Depth:	86.7°	(90°+/-3°)	Convexity:	3.3mm	(+2mm+/-2)
Mandibular Plane:	82.9°	(87°+/-3°)	1/1 to APO:	3.1mm	(+1mm+/-2)
Conical Angle:	29.7°	(26°+/-4°)	1/1 Inclination to APO:	21.7°	(22°+/-4°)
Lower Facial Height:	67.3°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.4mm	(+1mm)
Mandibular Arc:	47°	(47°+/-4°)	Upper Molar to PTV:	10.4mm	Alter+3mm+/-2
Maxillary Depth:	26.5°	(27°+/-4°)	Condyloincisal Angle:	84°	(90°)
Corpus Axis:	87°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-4mm	(-2mm+/-2mm)
Ramusposition:	59.5mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-1mm	(-3.5mm)
Craniale Deflexion:	71°	(76°+/-3°)	Porionlocalisation:	"- 31.3mm	(-39mm+/-2.2)
Posterior Fac.Height:	26.1°	(27°+/-4°)	Ant.Cran. Base:	52.6mm	(55mm)
Hellgreen:	52.2mm	(55mm+/-3.3)	Palatinal Plane:	"- 3°	(-1°+/-3.5°)
Saddle Angle:	0.7mm	(-3mm)	Maxillary Height:	51.7°	(53°+/-3°)
Articular Angle:	110°	(123°+/-5°)	Posterior Facial Height:	66.4mm	(55mm+/-3.3)
Gonion Angle:	154°	(143°+/-6°)	Anterior Facial Height:	103mm	(Na-Me)
Angle Sum:	128°	(130°+/-7°)	Rel. Facial Height:	64.3%	(62-65% d. vord.)
Ant.Cr. Base Length:	392°	(396°+/-6°)	SN-Basion:	123°	(131°+/-4.5°)
Post.Cr. Base Length:	68mm	(73mm+/-3mm)	Pal./Mand.Plane:	32.8°	(25°+/-6°)
Gonial Angle: (upper)	29.8mm	(37mm+/-3mm)	Upper Occl.-Plane:	18.8°	(10°+/-4°)
Gonial Angle: (lower)	53.3°	(55°+/-2°)	Lower Occl.-Plane:	20.3°	(20°+/-5°)
Ramus Height:	74.7°	(75°)	1-,-1 / Mand.Plane:	92.6°	(90°+/-3°)
Body Length:	38.2mm	(44mm+/-5mm)	1+,+1 / to SN:	99.3°	(102°+/-2°)
SNA:	61.2mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	134°	(125°-130°)
SNB:	82.8°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	78.3°	(80°)	ANB Diff:	4.5°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 25.01.2005

Name: La. P. (10 Years)			Control Group		
Remote X-Ray Analysis (25.1.2005)					
Facial Axis:	88°	(90°+/-3°)	Convexity:	2.6mm	(+2mm+/-2)
Facial Depth:	84°	(87°+/-3°)	1/1 to APO:	4.1mm	(+1mm+/-2)
Mandibular Plane:	31.5°	(26°+/-4°)	1/1 Inclination to APO:	28.2°	(22°+/-4°)
Conical Angle:	64.4°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.5mm	(+1mm)
Lower Facial Height:	50°	(47°+/-4°)	Upper Molar to PTV:	13.6mm	Alter+3mm+/-2
Mandibular Arc:	25.4°	(27°+/-4°)	Condyloincisal Angle:	81.3°	(90°)
Maxillary Depth:	87°	(90°+/-3°)	Lower Lip to Est.-Plane:	"- 2mm	(-2mm+/-2mm)
Corpus Axis:	62.8mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"- 4mm	(-3.5mm)
Ramusposition:	73.8°	(76°+/-3°)	Porionlocalisation:	"- 30.3mm	(-39mm+/-2.2)
Craniale Deflexion:	27.6°	(27°+/-4°)	Ant.Cran. Base:	59.1mm	(55mm)
Posterior Fac.Height:	50.8mm	(55mm+/-3.3)	Palatinal Plane:	"- 3°	(-1°+/-3.5°)
Hellgreen:	"- 4mm	(-3mm)	Maxillary Height:	52.9°	(53°+/-3°)
Saddle Angle:	117°	(123°+/-5°)	Posterior Facial Height:	66.7mm	(55mm+/-3.3)
Articular Angle:	150°	(143°+/-6°)	Anterior Facial Height:	110mm	(Na-Me)
Gonion Angle:	130°	(130°+/-7°)	Rel. Facial Height:	60.3%	(62-65% d. vord.)
Angle Sum:	397°	(396°+/-6°)	SN-Basion:	129°	(131°+/-4.5°)
Ant.Cr. Base Length:	67.3mm	(73mm+/-3mm)	Pal./Mand.Plane:	34.5°	(25°+/-6°)
Post.Cr. Base Length:	30.8mm	(37mm+/-3mm)	Upper Occl.-Plane:	16.5°	(10°+/-4°)
Gonial Angle: (upper)	52.4°	(55°+/-2°)	Lower Occl.-Plane:	20.8°	(20°+/-5°)
Gonial Angle: (lower)	77.6°	(75°)	1-,-1 / Mand.Plane:	95.3°	(90°+/-3°)
Ramus Height:	38.1mm	(44mm+/-5mm)	1+,+1 / to SN:	96.9°	(102°+/-2°)
Body Length:	64mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	128°	(125°-130°)
SNA:	79.1°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	75.9°	(80°)	ANB Diff:	3.1°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 24.04.2006

Name: La. P. (11Years)			Control Group		
Remote X-Ray Analysis (24.4.2006)					
Facial Axis:	89.3°	(90°+/-3°)	Convexity:	0.3mm	(+2mm+/-2)
Facial Depth:	82.2°	(87°+/-3°)	1/1 to APO:	4.6mm	(+1mm+/-2)
Mandibular Plane:	29.8°	(26°+/-4°)	1/1 Inclination to APO:	28.5°	(22°+/-4°)
Conical Angle:	67.9°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.8mm	(+1mm)
Lower Facial Height:	46.2°	(47°+/-4°)	Upper Molar to PTV:	7.9mm	Alter+3mm+/-2
Mandibular Arc:	30.2°	(27°+/-4°)	Condyloincisal Angle:	80.8°	(90°)
Maxillary Depth:	82.6°	(90°+/-3°)	Lower Lip to Est.-Plane:	"- 1mm	(-2mm+/-2mm)
Corpus Axis:	63.8mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"- 2mm	(-3.5mm)
Ramusposition:	61°	(76°+/-3°)	Porionlocalisation:	"- 36.3mm	(-39mm+/-2.2)
Craniale Deflexion:	22.2°	(27°+/-4°)	Ant.Cran. Base:	51.9mm	(55mm)
Posterior Fac.Height:	54.1mm	(55mm+/-3.3)	Palatinal Plane:	"- 3°	(-1°+/-3.5°)
Hellgreen:	"- 2mm	(-3mm)	Maxillary Height:	55.3°	(53°+/-3°)
Saddle Angle:	110°	(123°+/-5°)	Posterior Facial Height:	67mm	(55mm+/-3.3)
Articular Angle:	155°	(143°+/-6°)	Anterior Facial Height:	105mm	(Na-Me)
Gonion Angle:	126°	(130°+/-7°)	Rel. Facial Height:	64.1%	(62-65% d. vord.)
Angle Sum:	391°	(396°+/-6°)	SN-Basion:	120°	(131°+/-4.5°)
Ant.Cr. Base Length:	70.6mm	(73mm+/-3mm)	Pal./Mand.Plane:	32.8°	(25°+/-6°)
Post.Cr. Base Length:	30.7mm	(37mm+/-3mm)	Upper Occl.-Plane:	18.8°	(10°+/-4°)
Gonial Angle: (upper)	54°	(55°+/-2°)	Lower Occl.-Plane:	19.6°	(20°+/-5°)
Gonial Angle: (lower)	72°	(75°)	1-,-1 / Mand.Plane:	96.9°	(90°+/-3°)
Ramus Height:	37.8mm	(44mm+/-5mm)	1+,+1 / to SN:	106°	(102°+/-2°)
Body Length:	67.7mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	124°	(125°-130°)
SNA:	80.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	79.2°	(80°)	ANB Diff:	1.2°	(2°)

(Dr. Krenner Mauthausen 2006)

3.Patient: Au. L.

Fig. 1 Au. L. 25.08.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Au. L. 25.08.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 3 Au. L. 25.08.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 4 Au. L. 25.08.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 5 Au. L. 04.09.2006
(Photo Dr. Krenner Mauthausen 2006)

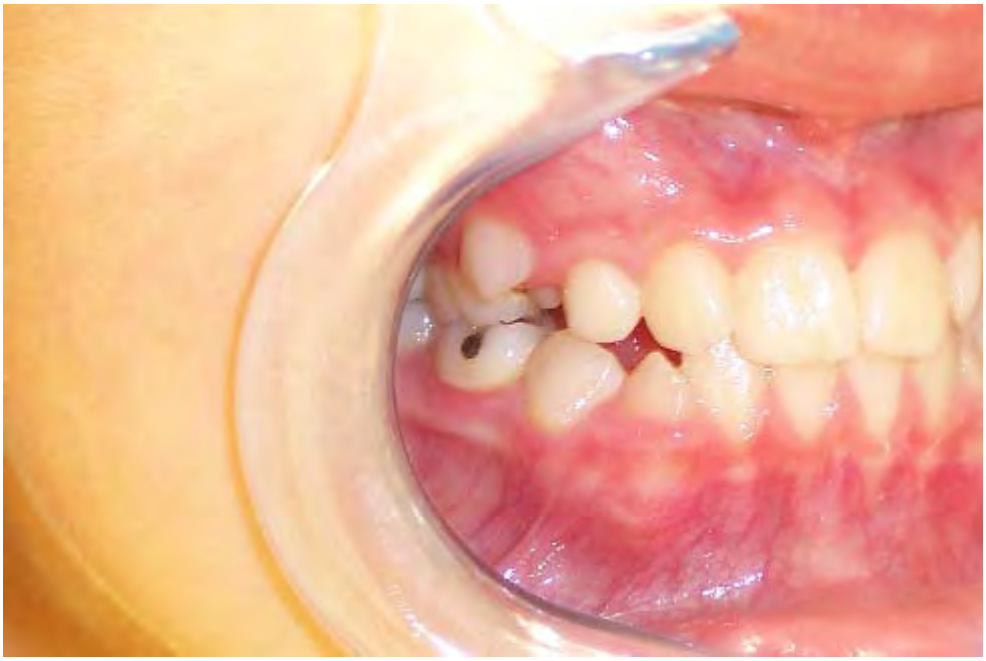


Fig. 6 Au. L. 04.09.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Au. L. 04.09.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Au. L. 11-2003 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Au. L. 11-2003 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Au. L. 11-2003 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Au. L. 02-2005 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Au. L. 02-2005 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Au. L. 02-2005 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 13 Au. L. 02-2006 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 14 Au. L. 02-2005 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 15 Au. L. 02-2005 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Au. L. (11Years)		Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
08.01.2004	7 / Minute	Compression			+	
25.05.2004	7 / Minute	Sidebending-Rotation Right			+	
23.09.2004	7 / Minute	Sidebending-Rotation Right			+	
19.10.2004	7 / Minute	Sidebending-Rotation Right			+	
16.12.2004	7 / Minute	Sidebending-Rotation Right			+	
18.01.2005	8 / Minute	Sidebending-Rotation Right			+	
31.05.2005	8 / Minute	Sidebending-Rotation Right			+	
25.08.2005	8 / Minute	Sidebending-Rotation Right			+	
20.10.2005	8 / Minute	Sidebending-Rotation Right			+	
02.02.2006	8 / Minute	Sidebending-Rotation Right			+	

(Dr. Krenner Mauthausen 2006)

1. Analysis - 27.10.2003

Name: Au. L. (7 Years)			Control Group		
Remote X-Ray Analysis (27.10.2003)					
Facial Axis:	84.6°	(90°+/-3°)	Convexity:	0.4mm	(+2mm+/-2)
Facial Depth:	80.6°	(87°+/-3°)	1/1 to APO:	3.5mm	(+1mm+/-2)
Mandibular Plane:	30.1°	(26°+/-4°)	1/1 Inclination to APO:	20.8°	(22°+/-4°)
Conical Angle:	69.1°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.3mm	(+1mm)
Lower Facial Height:	47.3°	(47°+/-4°)	Upper Molar to PTV:	9.1mm	Alter+3mm+/-2
Mandibular Arc:	36.4°	(27°+/-4°)	Condyloincisal Angle:	87.4°	(90°)
Maxillary Depth:	81.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.5mm	(-2mm+/-2mm)
Corpus Axis:	54.2mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	71.4°	(76°+/-3°)	Porionlocalisation:	"- 29mm	(-39mm+/-2.2)
Craniale Deflexion:	27.7°	(27°+/-4°)	Ant.Cran. Base:	57.3mm	(55mm)
Posterior Fac.Height:	50.7mm	(55mm+/-3.3)	Palatinal Plane:	"- 2°	(-1°+/-3.5°)
Hellgreen:	"-2mm	(-3mm)	Maxillary Height:	55.8°	(53°+/-3°)
Saddle Angle:	126°	(123°+/-5°)	Posterior Facial Height:	64.4mm	(55mm+/-3.3)
Articular Angle:	143°	(143°+/-6°)	Anterior Facial Height:	107mm	(Na-Me)
Gonion Angle:	130°	(130°+/-7°)	Rel. Facial Height:	60.5%	(62-65% d. vord.)
Angle Sum:	399°	(396°+/-6°)	SN-Basion:	134°	(131°+/-4.5°)
Ant.Cr. Base Length:	66.5mm	(73mm+/-3mm)	Pal. / Mand.Plane:	31.9°	(25°+/-6°)
Post.Cr. Base Length:	31mm	(37mm+/-3mm)	Upper Occl.-Plane:	17.9°	(10°+/-4°)
Gonial Angle: (upper)	54.4°	(55°+/-2°)	Lower Occl.-Plane:	17.2°	(20°+/-5°)
Gonial Angle: (lower)	75.6°	(75°)	1-,-1 / Mand.Plane:	90.5°	(90°+/-3°)
Ramus Height:	36.9mm	(44mm+/-5mm)	1+,+1 / to SN:	102°	(102°+/-2°)
Body Length:	56.5mm	(71mm+/-5mm	Upp.1/1 / lower 1/1 Angle:	126°	(125°-130°)
SNA:	71.3°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	70°	(80°)	ANB Diff:	1.2°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 18.01.2005

Name: Au. L. (8 Years)			Control Group		
Remote X-Ray Analysis (18.01.2005)					
Facial Axis:	83°	(90°+/-3°)	Convexity:	0.8mm	(+2mm+/-2)
Facial Depth:	81.4°	(87°+/-3°)	1/1 to APO:	3.3mm	(+1mm+/-2)
Mandibular Plane:	30.3°	(26°+/-4°)	1/1 Inclination to APO:	21.6°	(22°+/-4°)
Conical Angle:	68.2°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.8mm	(+1mm)
Lower Facial Height:	48.9°	(47°+/-4°)	Upper Molar to PTV:	10.5mm	Alter+3mm+/-2
Mandibular Arc:	34.9°	(27°+/-4°)	Condyloincisal Angle:	86.4°	(90°)
Maxillary Depth:	82.3°	(90°+/-3°)	Lower Lip to Est.-Plane:	1mm	(-2mm+/-2mm)
Corpus Axis:	55.3mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-4mm	(-3.5mm)
Ramusposition:	71.9°	(76°+/-3°)	Porionlocalisation:	"- 29.4mm	(-39mm+/-2.2)
Craniale Deflexion:	28.5°	(27°+/-4°)	Ant.Cran. Base:	55.7mm	(55mm)
Posterior Fac.Height:	49.5mm	(55mm+/-3.3)	Palatinal Plane:	"-3°	(-1°+/-3.5°)
Hellgreen:	"-2mm	(-3mm)	Maxillary Height:	56.1°	(53°+/-3°)
Saddle Angle:	125°	(123°+/-5°)	Posterior Facial Height:	62.8mm	(55mm+/-3.3)
Articular Angle:	146°	(143°+/-6°)	Anterior Facial Height:	108mm	(Na-Me)
Gonion Angle:	129°	(130°+/-7°)	Rel. Facial Height:	58.3%	(62-65% d. vord.)
Angle Sum:	400°	(396°+/-6°)	SN-Basion:	134°	(131°+/-4.5°)
Ant.Cr. Base Length:	67mm	(73mm+/-3mm)	Pal./Mand.Plane:	33.4	(25°+/-6°)
Post.Cr. Base Length:	30.4mm	(37mm+/-3mm)	Upper Occl.-Plane:	17.3°	(10°+/-4°)
Gonial Angle: (upper)	52.9°	(55°+/-2°)	Lower Occl.-Plane:	17.3°	(20°+/-5°)
Gonial Angle: (lower)	76.1°	(75°)	1-,-1 / Mand.Plane:	90.8°	(90°+/-3°)
Ramus Height:	35.1mm	(44mm+/-5mm)	1+,+1 / to SN:	99.9°	(102°+/-2°)
Body Length:	57.5mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	127°	(125°-130°)
SNA:	70.6°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	68.8°	(80°)	ANB Diff:	1.7°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 10.02.2006

Name: Au. L. (9 Years)			Control Group		
Remote X-Ray Analysis (10.02.2006)					
Facial Axis:	83.9°	(90°+/-3°)	Convexity:	3.1mm	(+2mm+/-2)
Facial Depth:	81.1°	(87°+/-3°)	1/1 to APO:	2.6mm	(+1mm+/-2)
Mandibular Plane:	27.6°	(26°+/-4°)	1/1 Inclination to APO:	23.4°	(22°+/-4°)
Conical Angle:	71.1°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.3mm	(+1mm)
Lower Facial Height:	47.6°	(47°+/-4°)	Upper Molar to PTV:	10.6mm	Alter+3mm+/-2
Mandibular Arc:	36.4°	(27°+/-4°)	Condyloincisal Angle:	83.1°	(90°)
Maxillary Depth:	84.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	0mm	(-2mm+/-2mm)
Corpus Axis:	58.6mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-1mm	(-3.5mm)
Ramusposition:	70.3°	(76°+/-3°)	Porionlocalisation:	"- 30.8mm	(-39mm+/-2.2)
Craniale Deflexion:	28.1°	(27°+/-4°)	Ant.Cran. Base:	58.7mm	(55mm)
Posterior Fac.Height:	54.7mm	(55mm+/-3.3)	Palatinal Plane:	0°	(-1°+/-3.5°)
Hellgreen:	0mm	(-3mm)	Maxillary Height:	59.4°	(53°+/-3°)
Saddle Angle:	125°	(123°+/-5°)	Posterior Facial Height:	68.5mm	(55mm+/-3.3)
Articular Angle:	151°	(143°+/-6°)	Anterior Facial Height:	112mm	(Na-Me)
Gonion Angle:	121°	(130°+/-7°)	Rel. Facial Height:	61.2%	(62-65% d. vord.)
Angle Sum:	397°	(396°+/-6°)	SN-Basion:	133°	(131°+/-4.5°)
Ant.Cr. Base Length:	68.9mm	(73mm+/-3mm)	Pal./Mand.Plane:	28°	(25°+/-6°)
Post.Cr. Base Length:	29.7mm	(37mm+/-3mm)	Upper Occl.-Plane:	14.6°	(10°+/-4°)
Gonial Angle: (upper)	47.3°	(55°+/-2°)	Lower Occl.-Plane:	15.7°	(20°+/-5°)
Gonial Angle: (lower)	73.3°	(75°)	1-,-1 / Mand.Plane:	98.1°	(90°+/-3°)
Ramus Height:	40.8mm	(44mm+/-5mm)	1+,+1 / to SN:	101°	(102°+/-2°)
Body Length:	61.6mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	122°	(125°-130°)
SNA:	73.2°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	69.6°	(80°)	ANB Diff:	3.6°	(2°)

(Dr. Krenner Mauthausen 2006)

4.Patient: Ha. L.

Fig. 1 Ha. L. 01.03.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 2 Ha. L. 01.03.2005
(Photo Dr. Krenner Mauthausen 2005)

Fig. 3 Ha. L. 12-2006
(Photo Dr. Krenner Mauthausen 2006)

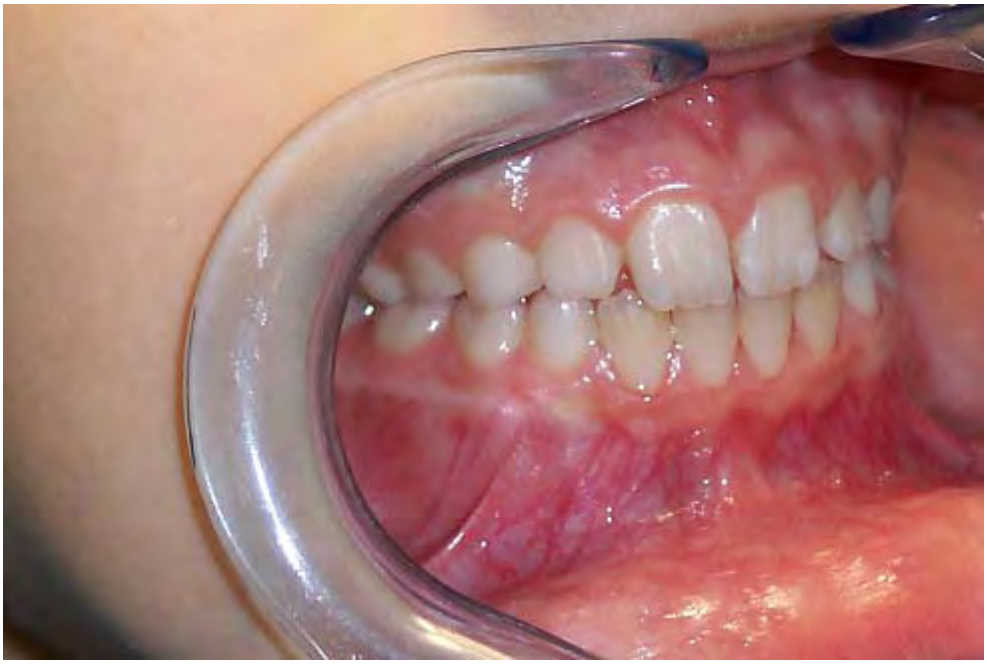


Fig. 4 Ha. L. 12-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Ha. L. 12-2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ha. L. 03-2005 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Ha. L. 03-2005 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Ha. L. 03-2005 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Ha. L. 03-2006 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Ha. L. 03-2006 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Ha. L. 03-2006 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Ha. L. 12-2006 (Model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ha. L. 12-2006 (Model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 14 Ha. L. 12-2006 (Model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Hamb. L. (8 Years)		Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
17.02.2005	8/ Minute	Sidebending-Rotation links	+			
01.03.2005	7/ Minute	Sidebending-Rotation links	+			
15.03.2005	8/ Minute	Sidebending-Rotation links	+			
09.05.2005	8/ Minute	Sidebending-Rotation links	+			
16.06.2005	7/ Minute	Sidebending-Rotation links	+			
18.08.2005	8/ Minute	Sidebending-Rotation links	+			
17.10.2005	8/ Minute	Sidebending-Rotation links	+			
12.12.2005	7/ Minute	Sidebending-Rotation links	+			
24.01.2006	7/ Minute	Sidebending-Rotation links	+			
23.03.2006	8/ Minute	Sidebending-Rotation links	+			
04.07.2006	8/ Minute	Sidebending-Rotation links	+			
30.08.2006	8/ Minute	Sidebending-Rotation links	+			
14.11.2006	7/ Minute	Sidebending-Rotation links	+			

Dr. Krenner Mauthausen 2006

1. Analysis - 17.02.2005

Name: Ha. L. (6 Years)			Control Group		
Remote X-Ray Analysis (17.02.2005)					
Facial Axis:	84.6°	(90°+/-3°)	Convexity:	0mm	(+2mm+/-2)
Facial Depth:	86.1°	(87°+/-3°)	1/1 to APO:	2.3mm	(+1mm+/-2)
Mandibular Plane:	31°	(26°+/-4°)	1/1 Inclination to APO:	21.6°	(22°+/-4°)
Conical Angle:	62.7°	(67°+/-4°)	1/1 to Occlusion-Plane:	"-1mm	(+1mm)
Lower Facial Height:	51°	(47°+/-4°)	Upper Molar to PTV:	11.2mm	Alter+3mm+/-2
Mandibular Arc:	29.8°	(27°+/-4°)	Condyloincisal Angle:	89.5°	(90°)
Maxillary Depth:	86°	(90°+/-3°)	Lower Lip to Est.-Plane:	0mm	(-2mm+/-2mm)
Corpus Axis:	59.9mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	73°	(76°+/-3°)	Porionlocalisation:	"- 32.9mm	(-39mm+/-2.2)
Craniale Deflexion:	30.3°	(27°+/-4°)	Ant.Cran. Base:	54.8mm	(55mm)
Posterior Fac.Height:	50.8mm	(55mm+/-3.3)	Palatinal Plane:	"-9°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	56.5°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	63.6mm	(55mm+/-3.3)
Articular Angle:	146°	(143°+/-6°)	Anterior Facial Height:	109mm	(Na-Me)
Gonion Angle:	132°	(130°+/-7°)	Rel. Facial Height:	58.2%	(62-65% d. vord.)
Angle Sum:	400°	(396°+/-6°)	SN-Basion:	131°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.4mm	(73mm+/-3mm)	Pal./Mand.Plane:	39.8°	(25°+/-6°)
Post.Cr. Base Length:	31.8mm	(37mm+/-3mm)	Upper Occl.-Plane:	18.1°	(10°+/-4°)
Gonial Angle: (upper)	54°	(55°+/-2°)	Lower Occl.-Plane:	19.1°	(20°+/-5°)
Gonial Angle: (lower)	78°	(75°)	1-,-1 / Mand.Plane:	84.3°	(90°+/-3°)
Ramus Height:	34.4mm	(44mm+/-5mm)	1+,+1 / to SN:	98.1°	(102°+/-2°)
Body Length:	62.2mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	135°	(125°-130°)
SNA:	74.9°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	74.1°	(80°)	ANB Diff:	0.8°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 04.07.2006

Name: Ha. L. (8 Years)			Control Group		
Remote X-Ray Analysis (04.07.2006)					
Facial Axis:	85.2°	(90°+/-3°)	Convexity:	3.3mm	(+2mm+/-2)
Facial Depth:	85.1°	(87°+/-3°)	1/1 to APO:	2.3mm	(+1mm+/-2)
Mandibular Plane:	28.5°	(26°+/-4°)	1/1 Inclination to APO:	21.7°	(22°+/-4°)
Conical Angle:	66.3°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	48.9°	(47°+/-4°)	Upper Molar to PTV:	10.9mm	Alter+3mm+/-2
Mandibular Arc:	31°	(27°+/-4°)	Condyloincisal Angle:	85.8°	(90°)
Maxillary Depth:	88.6°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-1mm	(-2mm+/-2mm)
Corpus Axis:	60.3mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	72.1°	(76°+/-3°)	Porionlocalisation:	"- 34.7mm	(-39mm+/-2.2)
Craniale Deflexion:	29.1°	(27°+/-4°)	Ant.Cran. Base:	56mm	(55mm)
Posterior Fac.Height:	55.3mm	(55mm+/-3.3)	Palatinal Plane:	"-5°	(-1°+/-3.5°)
Hellgreen:	1.7mm	(-3mm)	Maxillary Height:	59.8°	(53°+/-3°)
Saddle Angle:	122°	(123°+/-5°)	Posterior Facial Height:	68.4mm	(55mm+/-3.3)
Articular Angle:	148°	(143°+/-6°)	Anterior Facial Height:	112mm	(Na-Me)
Gonion Angle:	127°	(130°+/-7°)	Rel. Facial Height:	61.3%	(62-65% d. vord.)
Angle Sum:	397°	(396°+/-6°)	SN-Basion:	131°	(131°+/-4.5°)
Ant.Cr. Base Length:	66.9mm	(73mm+/-3mm)	Pal. / Mand.Plane:	33.1°	(25°+/-6°)
Post.Cr. Base Length:	32.3mm	(37mm+/-3mm)	Upper Occl.-Plane:	15.9°	(10°+/-4°)
Gonial Angle: (upper)	51.1°	(55°+/-2°)	Lower Occl.-Plane:	17.1°	(20°+/-5°)
Gonial Angle: (lower)	75.9°	(75°)	1-,-1 / Mand.Plane:	92°	(90°+/-3°)
Ramus Height:	38.8mm	(44mm+/-5mm)	1+,+1 / to SN:	97.2°	(102°+/-2°)
Body Length:	63.6mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	132°	(125°-130°)
SNA:	78.3°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	73.4°	(80°)	ANB Diff:	4.8°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 07.12.2006

Name: Ha. L. (8 Years)			Control Group		
Remote X-Ray Analysis (06.12.2006)					
Facial Axis:	84.5°	(90°+/-3°)	Convexity:	"-0.6mm	(+2mm+/-2)
Facial Depth:	84°	(87°+/-3°)	1/1 to APO:	4.4mm	(+1mm+/-2)
Mandibular Plane:	30.2°	(26°+/-4°)	1/1 Inclination to APO:	29.3°	(22°+/-4°)
Conical Angle:	65.6°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.3mm	(+1mm)
Lower Facial Height:	50°	(47°+/-4°)	Upper Molar to PTV:	12mm	Alter+3mm+/-2
Mandibular Arc:	26.6°	(27°+/-4°)	Condyloincisal Angle:	80.1°	(90°)
Maxillary Depth:	84.4°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-1.2mm	(-2mm+/-2mm)
Corpus Axis:	61.5mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-0.6mm	(-3.5mm)
Ramusposition:	72.1°	(76°+/-3°)	Porionlocalisation:	"-34.3mm	(-39mm+/-2.2)
Craniale Deflexion:	29.3°	(27°+/-4°)	Ant.Cran. Base:	58mm	(55mm)
Posterior Fac.Height:	54mm	(55mm+/-3.3)	Palatinal Plane:	"-4.7mm	(-1°+/-3.5°)
Hellgreen:	"-2.1mm	(-3mm)	Maxillary Height:	57.2°	(53°+/-3°)
Saddle Angle:	124°	(123°+/-5°)	Posterior Facial Height:	66.8mm	(55mm+/-3.3)
Articular Angle:	147°	(143°+/-6)	Anterior Facial Height:	113mm	(Na-Me)
Gonion Angle:	129°	(130°+/-7)	Rel. Facial Height:	59.1%	(62-65% d. vord.)
Angle Sum:	400°	(396°+/-6)	SN-Basion:	132°	(131°+/-4.5°)
Ant.Cr. Base Length:	67.4mm	(73mm+/- 3mm)	Pal. / Mand.Plane:	34.9°	(25°+/-6°)
Post.Cr. Base Length:	33mm	(37mm+/-3)	Upper Occl.-Plane:	16.9°	(10°+/-4°)
Gonial Angle: (upper)	51.9°	(55°+/-2°)	Lower Occl.-Plane:	18.1°	(20°+/-5°)
Gonial Angle: (lower)	77.1°	(75°)	1-,-1 / Mand.Plane:	95.7°	(90°+/-3°)
Ramus Height:	36.6mm	(44mm+/-5)	1+,+1 / to SN:	98.8°	(102°+/-2°)
Body Length:	63.3mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	124°	(125°-130°)
SNA:	73.6°	(82°+/-3,5)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	71.5°	(80°)	ANB Diff:	2°	(2°)

(Dr. Krenner Mauthausen 2006)

5.Patient: Tr. J.

Fig.1 Tr. J. 30.11.2004
(Photo Dr. Krenner Mauthausen 2004)

Fig. 2 Tr. J. 30.11.2004
(Photo Dr. Krenner Mauthausen 2004)

Fig. 3 Tr. J. 11.09.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Tr. J. 11.09.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Tr. J. 11.09.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Tr. J. 09- 2004 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Tr. J. 09- 2004 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Tr. J. 09- 2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Tr. J. 08- 2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Tr. J. 08- 2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig.11 Tr. J. 08- 2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Tr. J. 09- 2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 13 Tr. J. 09- 2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 14 Tr. J. 09- 2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Tr. J. (9 Years)		Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
28.09.2004	7/ Minute	Sidebending-Rotation Right		+		
12.11.2004	8/ Minute	Sidebending-Rotation Right		+		
11.01.2005	7/ Minute	Sidebending-Rotation Right		+		
15.02.2005	6/ Minute	Sidebending-Rotation Right		+		
12.04.2005	7/ Minute	Sidebending-Rotation Right		+		
21.06.2005	8/ Minute	Sidebending-Rotation Right		+		
18.08.2005	8/ Minute	Sidebending-Rotation Right		+		
08.11.2005	8/ Minute	Sidebending-Rotation Right		+		
07.03.2006	7/ Minute	Sidebending-Rotation Right	+			
28.03.2006	7/ Minute	Sidebending-Rotation Right	+			
02.05.2006	7/ Minute	Sidebending-Rotation Right	+			
11.07.2006	8/ Minute	Sidebending-Rotation Right	+			
01.09.2006	8/ Minute	Sidebending-Rotation Right	+			

(Dr. Krenner Mauthausen 2006)

1. Analysis - 21.09.2004

Name: Tr. J. (7 Years)			Control Group		
Remote X-Ray Analysis (21.09.2004)					
Facial Axis:	92.6°	(90°+/-3°)	Convexity:	0.7mm	(+2mm+/-2)
Facial Depth:	84.4°	(87°+/-3°)	1/1 to APO:	6.6mm	(+1mm+/-2)
Mandibular Plane:	31.4°	(26°+/-4°)	1/1 Inclination to APO:	30.4°	(22°+/-4°)
Conical Angle:	63.6°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.1mm	(+1mm)
Lower Facial Height:	45.8°	(47°+/-4°)	Upper Molar to PTV:	13.1mm	Alter+3mm+/-2
Mandibular Arc:	29°	(27°+/-4°)	Condyloincisal Angle:	81.9°	(90°)
Maxillary Depth:	85.6°	(90°+/-3°)	Lower Lip to Est.-Plane:	1.4mm	(-2mm+/-2mm)
Corpus Axis:	63.2mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	77.3°	(76°+/-3°)	Porionlocalisation:	"- 32.1mm	(-39mm+/-2.2)
Craniale Deflexion:	23.8°	(27°+/-4°)	Ant.Cran. Base:	58.6mm	(55mm)
Posterior Fac.Height:	50.4mm	(55mm+/-3.3)	Palatinal Plane:	0.1°	(-1°+/-3.5°)
Hellgreen:	"-7mm	(-3mm)	Maxillary Height:	58°	(53°+/-3°)
Saddle Angle:	125°	(123°+/-5°)	Posterior Facial Height:	66.4mm	(55mm+/-3.3)
Articular Angle:	135°	(143°+/-6°)	Anterior Facial Height:	109mm	(Na-Me)
Gonion Angle:	139°	(130°+/-7°)	Rel. Facial Height:	60.8%	(62-65% d. vord.)
Angle Sum:	399°	(396°+/-6°)	SN-Basion:	136°	(131°+/-4.5°)
Ant.Cr. Base Length:	67.4mm	(73mm+/-3mm)	Pal./Mand.Plane:	31.3°	(25°+/-6°)
Post.Cr. Base Length:	30.9mm	(37mm+/-3mm)	Upper Occl.-Plane:	14.3°	(10°+/-4°)
Gonial Angle: (upper)	59.7°	(55°+/-2°)	Lower Occl.-Plane:	16.4°	(20°+/-5°)
Gonial Angle: (lower)	79.3°	(75°)	1-,-1 / Mand.Plane:	94.9°	(90°+/-3°)
Ramus Height:	40.7mm	(44mm+/-5mm)	1+,+1 / to SN:	106°	(102°+/-2°)
Body Length:	61.1mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	118°	(125°-130°)
SNA:	77.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	77.6°	(80°)	ANB Diff:	"-0.1°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 21.08.2005

Name: Tr. J. (8 Years)			Control Group		
Remote X-Ray Analysis (21.08.2005)					
Facial Axis:	89.9°	(90°+/-3°)	Convexity:	0.4mm	(+2mm+/-2)
Facial Depth:	80.7°	(87°+/-3°)	1/1 to APO:	4.8mm	(+1mm+/-2)
Mandibular Plane:	31.5°	(26°+/-4°)	1/1 Inclination to APO:	28.1°	(22°+/-4°)
Conical Angle:	67.6°	(67°+/-4°)	1/1 to Occlusion-Plane:	"-1mm	(+1mm)
Lower Facial Height:	44°	(47°+/-4°)	Upper Molar to PTV:	12.3mm	Alter+3mm+/-2
Mandibular Arc:	31.8°	(27°+/-4°)	Condyloincisal Angle:	81.8°	(90°)
Maxillary Depth:	81.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	3.1mm	(-2mm+/-2mm)
Corpus Axis:	60.5mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	0.3mm	(-3.5mm)
Ramusposition:	67.9°	(76°+/-3°)	Porionlocalisation:	"- 36.2mm	(-39mm+/-2.2)
Craniale Deflexion:	21.8°	(27°+/-4°)	Ant.Cran. Base:	54.7mm	(55mm)
Posterior Fac.Height:	51.1mm	(55mm+/-3.3)	Palatinal Plane:	1.3°	(-1°+/-3.5°)
Hellgreen:	"-2mm	(-3mm)	Maxillary Height:	53.4°	(53°+/-3°)
Saddle Angle:	125°	(123°+/-5°)	Posterior Facial Height:	64.8mm	(55mm+/-3.3)
Articular Angle:	136°	(143°+/-6°)	Anterior Facial Height:	104mm	(Na-Me)
Gonion Angle:	132°	(130°+/-7°)	Rel. Facial Height:	62.4%	(62-65% d. vord.)
Angle Sum:	393°	(396°+/-6°)	SN-Basion:	135°	(131°+/-4.5°)
Ant.Cr. Base Length:	67.7mm	(73mm+/-3mm)	Pal. / Mand.Plane:	30.2°	(25°+/-6°)
Post.Cr. Base Length:	30.4mm	(37mm+/-3mm)	Upper Occl.-Plane:	15.4°	(10°+/-4°)
Gonial Angle: (upper)	59.1°	(55°+/-2°)	Lower Occl.-Plane:	16.9°	(20°+/-5°)
Gonial Angle: (lower)	72.9°	(75°)	1-,-1 / Mand.Plane:	96.3°	(90°+/-3°)
Ramus Height:	40.7mm	(44mm+/-5mm)	1+,+1 / to SN:	105°	(102°+/-2°)
Body Length:	63.2mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	123°	(125°-130°)
SNA:	77.9°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	77°	(80°)	ANB Diff:	0.9°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 05.09.2006

Name: Tr. J. (9 Years)			Control Group		
Remote X-Ray Analysis (05.09.2006)					
Facial Axis:	85.2°	(90°+/-3°)	Convexity:	5.6mm	(+2mm+/-2)
Facial Depth:	90.2°	(87°+/-3°)	1/1 to APO:	6.3mm	(+1mm+/-2)
Mandibular Plane:	25.8°	(26°+/-4°)	1/1 Inclination to APO:	23.3°	(22°+/-4°)
Conical Angle:	64°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	49.4°	(47°+/-4°)	Upper Molar to PTV:	20.4mm	Alter+3mm+/-2
Mandibular Arc:	33.6°	(27°+/-4°)	Condyloincisal Angle:	78.8°	(90°)
Maxillary Depth:	96°	(90°+/-3°)	Lower Lip to Est.-Plane:	3.8mm	(-2mm+/-2mm)
Corpus Axis:	60.8mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	2mm	(-3.5mm)
Ramusposition:	80.5°	(76°+/-3°)	Porionlocalisation:	"- 27.3mm	(-39mm+/-2.2)
Craniale Deflexion:	34.2°	(27°+/-4°)	Ant.Cran. Base:	57.2mm	(55mm)
Posterior Fac.Height:	50mm	(55mm+/-3.3)	Palatinal Plane:	"- 11°	(-1°+/-3.5°)
Hellgreen:	8.7mm	(-3mm)	Maxillary Height:	57.1°	(53°+/-3°)
Saddle Angle:	117°	(123°+/-5°)	Posterior Facial Height:	64.4mm	(55mm+/-3.3)
Articular Angle:	158°	(143°+/-6°)	Anterior Facial Height:	113mm	(Na-Me)
Gonion Angle:	127°	(130°+/-7°)	Rel. Facial Height:	57.0%	(62-65% d. vord.)
Angle Sum:	402°	(396°+/-6°)	SN-Basion:	136°	(131°+/-4.5°)
Ant.Cr. Base Length:	68.6mm	(73mm+/-3mm)	Pal./Mand.Plane:	36.7°	(25°+/-6°)
Post.Cr. Base Length:	31.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	12.3°	(10°+/-4°)
Gonial Angle: (upper)	48.7°	(55°+/-2°)	Lower Occl.-Plane:	30.1°	(20°+/-5°)
Gonial Angle: (lower)	78.3°	(75°)	1-,-1 / Mand.Plane:	93.1°	(90°+/-3°)
Ramus Height:	34mm	(44mm+/-5mm)	1+,+1 / to SN:	102°	(102°+/-2°)
Body Length:	63.1mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	121°	(125°-130°)
SNA:	78.1°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	72.6°	(80°)	ANB Diff:	5.5°	(2°)

(Dr. Krenner Mauthausen 2006)

6.Patient: St. L.

Fig. 1 St. L. 31.8.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 2 St. L. 31.8.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 3 St. L. 31.8.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 St. L. 09-2004 (model of upper jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 5 St. L. 09-2004 (model of lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 6 St. L. 09-2004 (model of upper and lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 7 St. L. 08-2005 (model of upper jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 8 St. L. 08-2005 (model of lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 9 St. L. 08-2005 (model of upper and lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 10 St. L. 08-2006 (model of upper jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig. 11 St. L. 08-2006 (model of lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Fig.12 St. L. 08-2006 (model of upper and lower jaw)
(Bild Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name:	St.L. (11Years)	Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
23.11.2004	6/ Minute	Sidebending-Rotation Left			+	
11.01.2005	7/ Minute	Sidebending-Rotation Left			+	
15.02.2005	7/ Minute	Sidebending-Rotation Left			+	
22.03.2005	8/ Minute	Sidebending-Rotation Left			+	
19.04.2005	8/ Minute	Sidebending-Rotation Left			+	
24.05.2005	9/ Minute	Sidebending-Rotation Left			+	
28.06.2005	8/ Minute	Sidebending-Rotation Left			+	
23.08.2005	8/ Minute	Sidebending-Rotation Left			+	
06.09.2005	7/ Minute	Sidebending-Rotation Left			+	
18.10.2005	7/ Minute	Sidebending-Rotation Left			+	
22.11.2005	7/ Minute	Sidebending-Rotation Left			+	
17.01.2006	8/ Minute	Sidebending-Rotation Left			+	
14.03.2006	8/ Minute	Sidebending-Rotation Left			+	
12.04.2006	7/ Minute	Sidebending-Rotation Left			+	
30.05.2006	8/ Minute	Sidebending-Rotation Left			+	
06.06.2006	8/ Minute	Sidebending-Rotation Left			+	
17.07.2006	7/ Minute	Sidebending-Rotation Left			+	
31.08.2006	8/ Minute	Sidebending-Rotation Left			+	

(Dr. Krenner Mauthausen 2006)

1. Analysis - 14.09.2004

Name: St. L. (9 Years)			Control Group		
Remote X-Ray Analysis (14.09.2004)					
Facial Axis:	86.1°	(90°+/-3°)	Convexity:	0.6mm	(+2mm+/-2)
Facial Depth:	80.5°	(87°+/-3°)	1/1 to APO:	"-0.8mm	(+1mm+/-2)
Mandibular Plane:	25.9°	(26°+/-4°)	1/1 Inclination to APO:	15.6°	(22°+/-4°)
Conical Angle:	73.4°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.1mm	(+1mm)
Lower Facial Height:	44.4°	(47°+/-4°)	Upper Molar to PTV:	4.7mm	Alter+3mm+/-2
Mandibular Arc:	39.2°	(27°+/-4°)	Condyloincisal Angle:	90.4°	(90°)
Maxillary Depth:	81.3°	(90°+/-3°)	Lower Lip to Est.-Plane:	0.1mm	(-2mm+/-2mm)
Corpus Axis:	58mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-4mm	(-3.5mm)
Ramusposition:	66°	(76°+/-3°)	Porionlocalisation:	"- 39.4mm	(-39mm+/-2.2)
Craniale Deflexion:	26.1°	(27°+/-4°)	Ant.Cran. Base:	55.8mm	(55mm)
Posterior Fac.Height:	57.5mm	(55mm+/-3.3)	Palatinal Plane:	"- 1°	(-1°+/-3.5°)
Hellgreen:	2mm	(-3mm)	Maxillary Height:	57.9°	(53°+/-3°)
Saddle Angle:	131°	(123°+/-5°)	Posterior Facial Height:	62.6mm	(55mm+/-3.3)
Articular Angle:	150°	(143°+/-6°)	Anterior Facial Height:	104mm	(Na-Me)
Gonion Angle:	114°	(130°+/-7°)	Rel. Facial Height:	60.1%	(62-65% d. vord.)
Angle Sum:	395°	(396°+/-6°)	SN-Basion:	137°	(131°+/-4.5°)
Ant.Cr. Base Length:	67.8mm	(73mm+/-3mm)	Pal./Mand.Plane:	27.1°	(25°+/-6°)
Post.Cr. Base Length:	31mm	(37mm+/-3mm)	Upper Occl.-Plane:	17.8°	(10°+/-4°)
Gonial Angle: (upper)	47.6°	(55°+/-2°)	Lower Occl.-Plane:	18.6°	(20°+/-5°)
Gonial Angle: (lower)	66.4°	(75°)	1-,-1 / Mand.Plane:	90°	(90°+/-3°)
Ramus Height:	33.7mm	(44mm+/-5mm)	1+,+1 / to SN:	94.6°	(102°+/-2°)
Body Length:	68mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	139°	(125°-130°)
SNA:	71.4°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	69°	(80°)	ANB Diff:	2.4°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 23.08.2005

Name: St. L. (10 Years)			Control Group		
Remote X-Ray Analysis (23.08.2005)					
Facial Axis:	81.1°	(90°+/-3°)	Convexity:	1.4mm	(+2mm+/-2)
Facial Depth:	78.9°	(87°+/-3°)	1/1 to APO:	"-0.8mm	(+1mm+/-2)
Mandibular Plane:	31.5°	(26°+/-4°)	1/1 Inclination to APO:	16°	(22°+/-4°)
Conical Angle:	69.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	5.5mm	(+1mm)
Lower Facial Height:	50.5°	(47°+/-4°)	Upper Molar to PTV:	3.5mm	Alter+3mm+/-2
Mandibular Arc:	37.3°	(27°+/-4°)	Condyloincisal Angle:	91.7°	(90°)
Maxillary Depth:	80.6°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpus Axis:	59.6mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-13mm	(-3.5mm)
Ramusposition:	60.5°	(76°+/-3°)	Porionlocalisation:	"- 41.5mm	(-39mm+/-2.2)
Craniale Deflexion:	24.5°	(27°+/-4°)	Ant.Cran. Base:	51.1mm	(55mm)
Posterior Fac.Height:	60.2mm	(55mm+/-3.3)	Palatinal Plane:	"- 4°	(-1°+/-3.5°)
Hellgreen:	"-6mm	(-3mm)	Maxillary Height:	55.6°	(53°+/-3°)
Saddle Angle:	127°	(123°+/-5°)	Posterior Facial Height:	64mm	(55mm+/-3.3)
Articular Angle:	152°	(143°+/-6°)	Anterior Facial Height:	110mm	(Na-Me)
Gonion Angle:	119°	(130°+/-7°)	Rel. Facial Height:	58.5%	(62-65% d. vord.)
Angle Sum:	398°	(396°+/-6°)	SN-Basion:	134°	(131°+/-4.5°)
Ant.Cr. Base Length:	68.5mm	(73mm+/-3mm)	Pal. / Mand.Plane:	35°	(25°+/-6°)
Post.Cr. Base Length:	32.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	19.6°	(10°+/-4°)
Gonial Angle: (upper)	47.9°	(55°+/-2°)	Lower Occl.-Plane:	16.8°	(20°+/-5°)
Gonial Angle: (lower)	71.1°	(75°)	1-,-1 / Mand.Plane:	87.1°	(90°+/-3°)
Ramus Height:	33.4mm	(44mm+/-5mm)	1+,+1 / to SN:	93.7°	(102°+/-2°)
Body Length:	66.3mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	140°	(125°-130°)
SNA:	72.8°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	69.5°	(80°)	ANB Diff:	3.2°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 31.08.2006

Name: St. L. (11 Years)			Control Group		
Remote X-Ray Analysis (21.09.2004)					
Facial Axis:	92.3°	(90°+/-3°)	Convexity:	0mm	(+2mm+/-2)
Facial Depth:	78.6°	(87°+/-3°)	1/1 to APO:	1.9mm	(+1mm+/-2)
Mandibular Plane:	31°	(26°+/-4°)	1/1 Inclination to APO:	22.4°	(22°+/-4°)
Conical Angle:	70.2°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.1mm	(+1mm)
Lower Facial Height:	49.6°	(47°+/-4°)	Upper Molar to PTV:	15.2mm	Alter+3mm+/-2
Mandibular Arc:	39.5°	(27°+/-4°)	Condyloincisal Angle:	90.3°	(90°)
Maxillary Depth:	78.5°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-1mm	(-2mm+/-2mm)
Corpus Axis:	62.7mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-7mm	(-3.5mm)
Ramusposition:	76.2°	(76°+/-3°)	Porionlocalisation:	"- 24.7mm	(-39mm+/-2.2)
Craniale Deflexion:	22.5°	(27°+/-4°)	Ant.Cran. Base:	68.9mm	(55mm)
Posterior Fac.Height:	55.9mm	(55mm+/-3.3)	Palatinal Plane:	1.2°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	46.8°	(53°+/-3°)
Saddle Angle:	130°	(123°+/-5°)	Posterior Facial Height:	68.6mm	(55mm+/-3.3)
Articular Angle:	152°	(143°+/-6°)	Anterior Facial Height:	114mm	(Na-Me)
Gonion Angle:	115°	(130°+/-7°)	Rel. Facial Height:	60.0%	(62-65% d. vord.)
Angle Sum:	397°	(396°+/-6°)	SN-Basion:	136°	(131°+/-4.5°)
Ant.Cr. Base Length:	69mm	(73mm+/-3mm)	Pal./Mand.Plane:	29.8°	(25°+/-6°)
Post.Cr. Base Length:	30.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	15.3°	(10°+/-4°)
Gonial Angle: (upper)	44.2°	(55°+/-2°)	Lower Occl.-Plane:	15.2°	(20°+/-5°)
Gonial Angle: (lower)	70.8°	(75°)	1-,-1 / Mand.Plane:	92.5°	(90°+/-3°)
Ramus Height:	40mm	(44mm+/-5mm)	1+,+1 / to SN:	96.4°	(102°+/-2°)
Body Length:	69mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	132°	(125°-130°)
SNA:	70.9°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	69.7°	(80°)	ANB Diff:	1.2°	(2°)

(Dr. Krenner Mauthausen 2006)

7.Patient: Ha. C.

Fig. 1 Ha. C. 09.12.2004
(Photo Dr. Krenner Mauthausen 2004)

Fig. 2 Ha. C. 09.12.2004
(Photo Dr. Krenner Mauthausen 2004)

Fig. 3 Ha. C. 09.12.2004
(Photo Dr. Krenner Mauthausen 2004)

Fig. 4 Ha. C. 30.03.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Ha. C. 30.03.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Ha. C. 10-2004 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Ha. C. 10-2004 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Ha. C. 10-2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Ha. C. 10-2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Ha. C. 10-2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Ha. C. 10-2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Ha. C. 09-2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 13 Ha. C. 09-2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 14 Ha. C. 09-2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Haun Ch. (10 Years)		Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS-Lesion:	Class I	Class II/1	Class II/2	Class III
28.10.2004	6/ Minute	Sidebending-Rotation Left			+	
20.01.2005	6/ Minute	Sidebending-Rotation Left			+	
03.03.2005	7/ Minute	Sidebending-Rotation Left			+	
14.06.2005	7/ Minute	Sidebending-Rotation Left			+	
23.08.2005	8/ Minute	Sidebending-Rotation Left			+	
20.09.2005	7/ Minute	Sidebending-Rotation Left			+	
18.10.2005	7/ Minute	Sidebending-Rotation Left			+	
05.11.2005	7/ Minute	Sidebending-Rotation Left			+	
13.12.2005	8/ Minute	Sidebending-Rotation Left			+	
05.01.2006	8/ Minute	Sidebending-Rotation Left			+	
14.02.2006	8/ Minute	Sidebending-Rotation Left			+	
14.03.2006	7/ Minute	Sidebending-Rotation Left			+	
04.05.2006	8/ Minute	Sidebending-Rotation Left			+	
01.06.2006	7/ Minute	Sidebending-Rotation Left			+	
13.07.2006	7/ Minute	Sidebending-Rotation Left			+	
14.09.2006	7/ Minute	Sidebending-Rotation Left			+	
19.10.2006	8/ Minute	Sidebending-Rotation Left			+	

(Dr. Krenner Mauthausen 2006)

1. Analysis - 21.10.2004

Name: Ha. C. (8 Years)			Control Group		
Remote X-Ray Analysis (21.10.2004)					
Facial Axis:	85.2°	(90°+/-3°)	Convexity:	3.5mm	(+2mm+/-2)
Facial Depth:	80.2°	(87°+/-3°)	1/1 to APO:	"-0.5mm	(+1mm+/-2)
Mandibular Plane:	28.6°	(26°+/-4°)	1/1 Inclination to APO:	18°	(22°+/-4°)
Conical Angle:	71.1°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	42.9°	(47°+/-4°)	Upper Molar to PTV:	3.4mm	Alter+3mm+/-2
Mandibular Arc:	38°	(27°+/-4°)	Condyloincisal Angle:	90.7°	(90°)
Maxillary Depth:	84°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-4mm	(-2mm+/-2mm)
Corpus Axis:	58.2mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	0mm	(-3.5mm)
Ramusposition:	61.7°	(76°+/-3°)	Porionlocalisation:	"- 34.5mm	(-39mm+/-2.2)
Craniale Deflexion:	23.4°	(27°+/-4°)	Ant.Cran. Base:	51.7mm	(55mm)
Posterior Fac.Height:	55.2mm	(55mm+/-3.3)	Palatinal Plane:	3.3°	(-1°+/-3.5°)
Hellgreen:	0.8mm	(-3mm)	Maxillary Height:	60.8°	(53°+/-3°)
Saddle Angle:	125°	(123°+/-5°)	Posterior Facial Height:	69.3mm	(55mm+/-3.3)
Articular Angle:	144°	(143°+/-6°)	Anterior Facial Height:	106mm	(Na-Me)
Gonion Angle:	124°	(130°+/-7°)	Rel. Facial Height:	65.5%	(62-65% d. vord.)
Angle Sum:	393°	(396°+/-6°)	SN-Basion:	133°	(131°+/-4.5°)
Ant.Cr. Base Length:	64.8mm	(73mm+/-3mm)	Pal./Mand.Plane:	25.2°	(25°+/-6°)
Post.Cr. Base Length:	31.7mm	(37mm+/-3mm)	Upper Occl.-Plane:	13.6°	(10°+/-4°)
Gonial Angle: (upper)	51.1°	(55°+/-2°)	Lower Occl.-Plane:	11.7°	(20°+/-5°)
Gonial Angle: (lower)	72.9°	(75°)	1-,-1 / Mand.Plane:	93.5°	(90°+/-3°)
Ramus Height:	40.9mm	(44mm+/-5mm)	1+,+1 / to SN:	90.6°	(102°+/-2°)
Body Length:	58.4mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	141°	(125°-130°)
SNA:	78.3°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	73.6°	(80°)	ANB Diff:	4.7°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 21.10.2005

Name: Ha.C. (9 Years)			Control Group		
Remote X-Ray Analysis (21.10.2005)					
Facial Axis:	87.9°	(90°+/-3°)	Convexity:	2.7mm	(+2mm+/-2)
Facial Depth:	80.7°	(87°+/-3°)	1/1 to APO:	0.2mm	(+1mm+/-2)
Mandibular Plane:	27.7°	(26°+/-4°)	1/1 Inclination to APO:	16°	(22°+/-4°)
Conical Angle:	71.4°	(67°+/-4°)	1/1 to Occlusion-Plane:	0.4mm	(+1mm)
Lower Facial Height:	44.6°	(47°+/-4°)	Upper Molar to PTV:	5.7mm	Alter+3mm+/-2
Mandibular Arc:	35.9°	(27°+/-4°)	Condyloincisal Angle:	91.1°	(90°)
Maxillary Depth:	83.5°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-4mm	(-2mm+/-2mm)
Corpus Axis:	57.8mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-1mm	(-3.5mm)
Ramusposition:	67.9°	(76°+/-3°)	Porionlocalisation:	"- 33.8mm	(-39mm+/-2.2)
Craniale Deflexion:	22.4°	(27°+/-4°)	Ant.Cran. Base:	54.9mm	(55mm)
Posterior Fac.Height:	56.5mm	(55mm+/-3.3)	Palatinal Plane:	1.7°	(-1°+/-3.5°)
Hellgreen:	1.2mm	(-3mm)	Maxillary Height:	60.2°	(53°+/-3°)
Saddle Angle:	128°	(123°+/-5°)	Posterior Facial Height:	71.7mm	(55mm+/-3.3)
Articular Angle:	142°	(143°+/-6°)	Anterior Facial Height:	109mm	(Na-Me)
Gonion Angle:	122°	(130°+/-7°)	Rel. Facial Height:	65.7%	(62-65% d. vord.)
Angle Sum:	392°	(396°+/-6°)	SN-Basion:	138°	(131°+/-4.5°)
Ant.Cr. Base Length:	64.7mm	(73mm+/-3mm)	Pal./Mand.Plane:	26°	(25°+/-6°)
Post.Cr. Base Length:	33.1mm	(37mm+/-3mm)	Upper Occl.-Plane:	16.1°	(10°+/-4°)
Gonial Angle: (upper)	50°	(55°+/-2°)	Lower Occl.-Plane:	16.1°	(20°+/-5°)
Gonial Angle: (lower)	72°	(75°)	1-,-1 / Mand.Plane:	90.8°	(90°+/-3°)
Ramus Height:	42.5mm	(44mm+/-5mm)	1+,+1 / to SN:	92.5°	(102°+/-2°)
Body Length:	62mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	142°	(125°-130°)
SNA:	77.1°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	74°	(80°)	ANB Diff:	3°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 28.09.2006

Name: Ha. C. (10 Years)			Control Group		
Remote X-Ray Analysis (28.09.2006)					
Facial Axis:	87.5°	(90°+/-3°)	Convexity:	"-1	(+2mm+/-2)
Facial Depth:	81°	(87°+/-3°)	1/1 to APO:	3.6mm	(+1mm+/-2)
Mandibular Plane:	26.5°	(26°+/-4°)	1/1 Inclination to APO:	22.8°	(22°+/-4°)
Conical Angle:	72.4°	(67°+/-4°)	1/1 to Occlusion-Plane:	2.1mm	(+1mm)
Lower Facial Height:	47.8°	(47°+/-4°)	Upper Molar to PTV:	6.1mm	Alter+3mm+/-2
Mandibular Arc:	33.6°	(27°+/-4°)	Condyloincisal Angle:	86.9°	(90°)
Maxillary Depth:	80.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-4 mm	(-2mm+/-2mm)
Corpusaxis:	58.7mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-3 mm	(-3.5mm)
Ramusposition:	70°	(76°+/-3°)	Porionlocalisation:	"- 32.7mm	(-39mm+/-2.2)
Craniale Deflexion:	23°	(27°+/-4°)	Ant.Cran. Base:	55.3mm	(55mm)
Posterior Fac.Height:	59.8mm	(55mm+/-3.3)	Palatinal Plane:	1.7°	(-1°+/-3.5°)
Hellgreen:	"-2mm	(-3mm)	Maxillary Height:	59.1°	(53°+/-3°)
Saddle Angle:	128°	(123°+/-5°)	Posterior Facial Height:	73mm	(55mm+/-3.3)
Articular Angle:	143°	(143°+/-6°)	Anterior Facial Height:	110mm	(Na-Me)
Gonion Angle:	121°	(130°+/-7°)	Rel. Facial Height:	66.3%	(62-65% d. vord.)
Anglesum:	392°	(396°+/-6°)	SN-Basion:	137°	(131°+/-4.5°)
Ant.Cr. Base Length:	65.8mm	(73mm+/-3mm)	Pal. / Mand.Plane:	24.7°	(25°+/-6°)
Post.Cr. Base Length:	33.3mm	(37mm+/-3mm)	Upper Occl.-Plane:	13.3°	(10°+/-4°)
Gonial Angle: (upper)	49.7°	(55°+/-2°)	Lower Occl.-Plane:	18°	(20°+/-5°)
Gonial Angle: (lower)	71.3°	(75°)	1-,-1 / Mand.Plane:	94.4°	(90°+/-3°)
Ramus Height:	43.3mm	(44mm+/-5mm)	1+,+1 / to SN:	95.4°	(102°+/-2°)
Body Length:	61.2mm	(71mm+/-5mm)	Upp.1/1 / lower 1/1 Angle:	136°	(125°-130°)
SNA:	73°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	73.4°	(80°)	ANB Diff:	"-0.5°	(2°)

(Dr. Krenner Mauthausen 2006)

8.Patient: Wö. B.

Fig. 1 Wö. B. 13.07.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 2 Wö. B. 13.07.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 3 Wö. B. 13.07.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Wö. B. 11- 2003 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Wö. B. 11- 2003 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Wö. B. 11- 2003 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Wö. B. 07- 2004 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Wö. B. 07- 2004 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Wö. B. 07- 2004 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Wö. B. 07- 2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Wö. B. 07- 2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Wö. B. 07- 2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Wö. B. (10Years)		Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
08.01.2004	8/ Minute	Lateral Strain Right			+	
01.04.2004	7/ Minute	Lateral Strain Right			+	
03.06.2004	7/ Minute	Lateral Strain Right			+	
15.07.2004	7/ Minute	Lateral Strain Right			+	
24.08.2004	7/ Minute	Lateral Strain Right			+	
23.09.2004	8/ Minute	Lateral Strain Right			+	
19.10.2004	7/ Minute	Lateral Strain Right			+	
11.11.2004	7/ Minute	Lateral Strain Right			+	
18.01.2005	8/ Minute	Lateral Strain Right			+	
01.02.2005	7/ Minute	Lateral Strain Right			+	
19.04.2005	7/ Minute	Lateral Strain Right			+	
19.05.2005	7/ Minute	Lateral Strain Right			+	
19.07.2005	8/ Minute	Lateral Strain Right			+	
07.09.2005	8/ Minute	Lateral Strain Right			+	
20.10.2005	8/ Minute	Lateral Strain Right			+	
30.11.2005	8/ Minute	Lateral Strain Right			+	
17.01.2006	8/ Minute	Lateral Strain Right			+	

(Dr. Krenner Mauthausen 2006)

1. Analysis - 25.11.2003

Name: Wö. B . (8 Years)			Control Group		
Remote X-Ray Analysis (25.11.2003)					
Facial Axis:	97.3°	(90°+/-3°)	Convexity:	"-2mm	(+2mm+/-2)
Facial Depth:	82.6°	(87°+/-3°)	1/1 to APO:	"-2.3mm	(+1mm+/-2)
Mandibular Plane:	24.9°	(26°+/-4°)	1/1 Inclination to APO:	19.1°	(22°+/-4°)
Conical Angle:	72.3°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.1mm	(+1mm)
Lower Facial Height:	33.3°	(47°+/-4°)	Upper Molar to PTV:	5.9mm	Alter+3mm+/-2
Mandibular Arc:	32.7°	(27°+/-4°)	Condyloincisal Angle:	92.8°	(90°)
Maxillary Depth:	80.4°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-2mm	(-2mm+/-2mm)
Corpusaxis:	62.2mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-1mm	(-3.5mm)
Ramusposition:	62°	(76°+/-3°)	Porionlocalisation:	"- 31.5mm	(-39mm+/-2.2)
Craniale Deflexion:	20.3°	(27°+/-4°)	Ant.Cran. Base:	57.3mm	(55mm)
Posterior Fac.Height:	48.3mm	(55mm+/-3.3)	Palatinal Plane:	2.5°	(-1°+/-3.5°)
Hellgreen:	"-1mm	(-3mm)	Maxillary Height:	55.9°	(53°+/-3°)
Saddle Angle:	133°	(123°+/-5°)	Posterior Facial Height:	61.5mm	(55mm+/-3.3)
Articular Angle:	126°	(143°+/-6°)	Anterior Facial Height:	97.6mm	(Na-Me)
Gonion Angle:	132°	(130°+/-7°)	Rel. Facial Height:	62.9%	(62-65% d. vord.)
Anglesum:	391°	(396°+/-6°)	SN-Basion:	145°	(131°+/-4.5°)
Ant.Cr. Base Length:	67.2mm	(73mm+/-3mm)	Pal./Mand.Plane:	22.4°	(25°+/-6°)
Post.Cr. Base Length:	31.1mm	(37mm+/-3mm)	Upper Occl.-Plane:	14.7°	(10°+/-4°)
Gonial Angle: (upper)	63.8°	(55°+/-2°)	Lower Occl.-Plane:	14.5°	(20°+/-5°)
Gonial Angle: (lower)	68.2°	(75°)	1-,-1 / Mand.Plane:	88.6°	(90°+/-3°)
Ramus Height:	37.6mm	(44mm+/-5mm)	1+,+1 / to SN:	92.1°	(102°+/-2°)
Body Length:	60.9mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	146°	(125°-130°)
SNA:	72.6°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	72.5°	(80°)	ANB Diff:	0°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 24.08.2004

Name: Wö. B. (9 Years)			Control Group		
Remote X-Ray Analysis (24.08.2004)					
Facial Axis:	95.4°	(90°+/-3°)	Convexity:	"-2mm	(+2mm+/-2)
Facial Depth:	84.3°	(87°+/-3°)	1/1 to APO:	"-2.5mm	(+1mm+/-2)
Mandibular Plane:	22.1°	(26°+/-4°)	1/1 Inclination to APO:	19.8°	(22°+/-4°)
Conical Angle:	73.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.1mm	(+1mm)
Lower Facial Height:	36.8°	(47°+/-4°)	Upper Molar to PTV:	6.5mm	Alter+3mm+/-2
Mandibular Arc:	30.7°	(27°+/-4°)	Condyloincisal Angle:	92.2°	(90°)
Maxillary Depth:	82.2°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-6mm	(-2mm+/-2mm)
Corpusaxis:	62.7mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	68°	(76°+/-3°)	Porionlocalisation:	"- 38.4mm	(-39mm+/-2.2)
Craniale Deflexion:	23.3°	(27°+/-4°)	Ant.Cran. Base:	58.1mm	(55mm)
Posterior Fac.Height:	54mm	(55mm+/-3.3)	Palatinal Plane:	"-1°	(-1°+/-3.5°)
Hellgreen:	"-1mm	(-3mm)	Maxillary Height:	56.2°	(53°+/-3°)
Saddle Angle:	133°	(123°+/-5°)	Posterior Facial Height:	65.4mm	(55mm+/-3.3)
Articular Angle:	128°	(143°+/-6°)	Anterior Facial Height:	101mm	(Na-Me)
Gonion Angle:	129°	(130°+/-7°)	Rel. Facial Height:	64.7%	(62-65% d. vord.)
Anglesum:	390°	(396°+/-6°)	SN-Basion:	143°	(131°+/-4.5°)
Ant.Cr. Base Length:	68.4mm	(73mm+/-3mm)	Pal./Mand.Plane:	22.6°	(25°+/-6°)
Post.Cr. Base Length:	31.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	15.9°	(10°+/-4°)
Gonial Angle: (upper)	60.9°	(55°+/-2°)	Lower Occl.-Plane:	12°	(20°+/-5°)
Gonial Angle: (lower)	68.1°	(75°)	1-,-1 / Mand.Plane:	90.7°	(90°+/-3°)
Ramus Height:	40.8mm	(44mm+/-5mm)	1+,+1 / to SN:	94.1°	(102°+/-2°)
Body Length:	61.1mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	143°	(125°-130°)
SNA:	72.6°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	71.9°	(80°)	ANB Diff:	0.6°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 13.07.2006

Name: Wö. B. (10Years)			Control Group		
Remote X-Ray Analysis (13.07.2006)					
Facial Axis:	94.7°	(90°+/-3°)	Convexity:	"-4mm	(+2mm+/-2)
Facial Depth:	86.4°	(87°+/-3°)	1/1 to APO:	"-3.7mm	(+1mm+/-2)
Mandibular Plane:	21.4°	(26°+/-4°)	1/1 Inclination to APO:	17.4°	(22°+/-4°)
Conical Angle:	72°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.3mm	(+1mm)
Lower Facial Height:	35.2°	(47°+/-4°)	Upper Molar to PTV:	9mm	Alter+3mm+/-2
Mandibular Arc:	33.3°	(27°+/-4°)	Condyloincisal Angle:	99.7°	(90°)
Maxillary Depth:	82°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-7mm	(-2mm+/-2mm)
Corpusaxis:	66.8mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-2mm	(-3.5mm)
Ramusposition:	68.6°	(76°+/-3°)	Porionlocalisation:	"- 33.9mm	(-39mm+/-2.2)
Craniale Deflexion:	25.5°	(27°+/-4°)	Ant.Cran. Base:	61.6mm	(55mm)
Posterior Fac.Height:	56mm	(55mm+/-3.3)	Palatinal Plane:	3.1°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	58.6°	(53°+/-3°)
Saddle Angle:	133°	(123°+/-5°)	Posterior Facial Height:	70.8mm	(55mm+/-3.3)
Articular Angle:	127°	(143°+/-6°)	Anterior Facial Height:	109mm	(Na-Me)
Gonion Angle:	131°	(130°+/-7°)	Rel. Facial Height:	65.2%	(62-65% d. vord.)
Anglesum:	391°	(396°+/-6°)	SN-Basion:	140°	(131°+/-4.5°)
Ant.Cr. Base Length:	71.4mm	(73mm+/-3mm)	Pal./Mand.Plane:	18.2°	(25°+/-6°)
Post.Cr. Base Length:	33.7mm	(37mm+/-3mm)	Upper Occl.-Plane:	12.9°	(10°+/-4°)
Gonial Angle: (upper)	60.6°	(55°+/-2°)	Lower Occl.-Plane:	11.9°	(20°+/-5°)
Gonial Angle: (lower)	70.4°	(75°)	1-,-1 / Mand.Plane:	83.8°	(90°+/-3°)
Ramus Height:	45mm	(44mm+/-5mm)	1+,+1 / to SN:	92.5°	(102°+/-2°)
Body Length:	64.2mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	151°	(125°-130°)
SNA:	71.2°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.8 zu 1	(1,1:1)
SNB:	72°	(80°)	ANB Diff:	"-0.8°	(2°)

(Dr. Krenner Mauthausen 2006)

9.Patient: Br. E.-M.

Fig. 1 Br. E.-M. 04.09.2006
(Photo Dr. Krenner Mauthausen 2006)

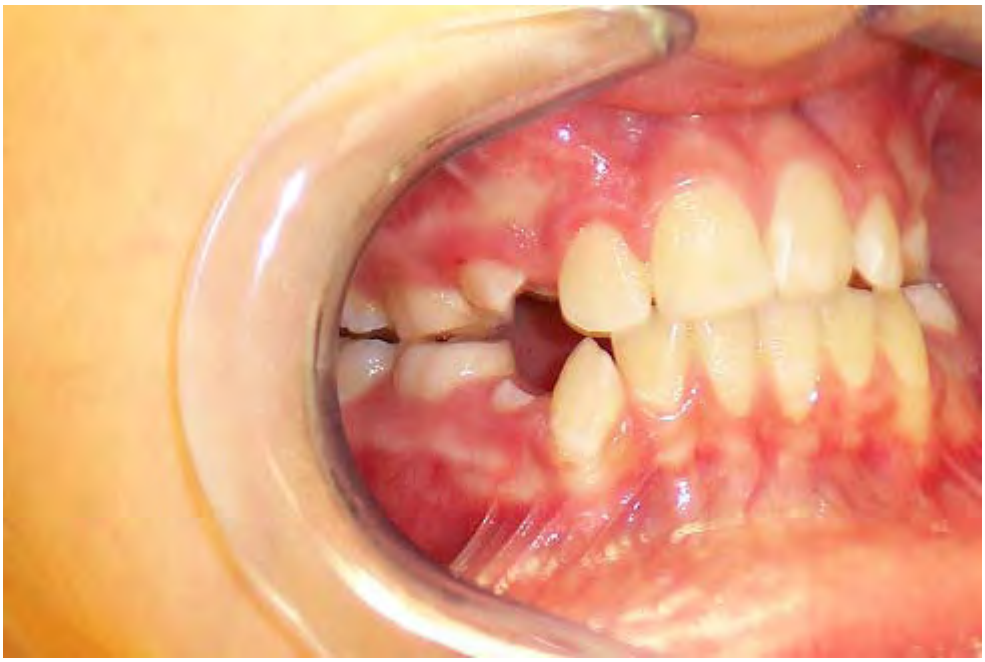


Fig. 2 Br. E.-M. 04.09.2006
(Photo Dr. Krenner Mauthausen 2006)

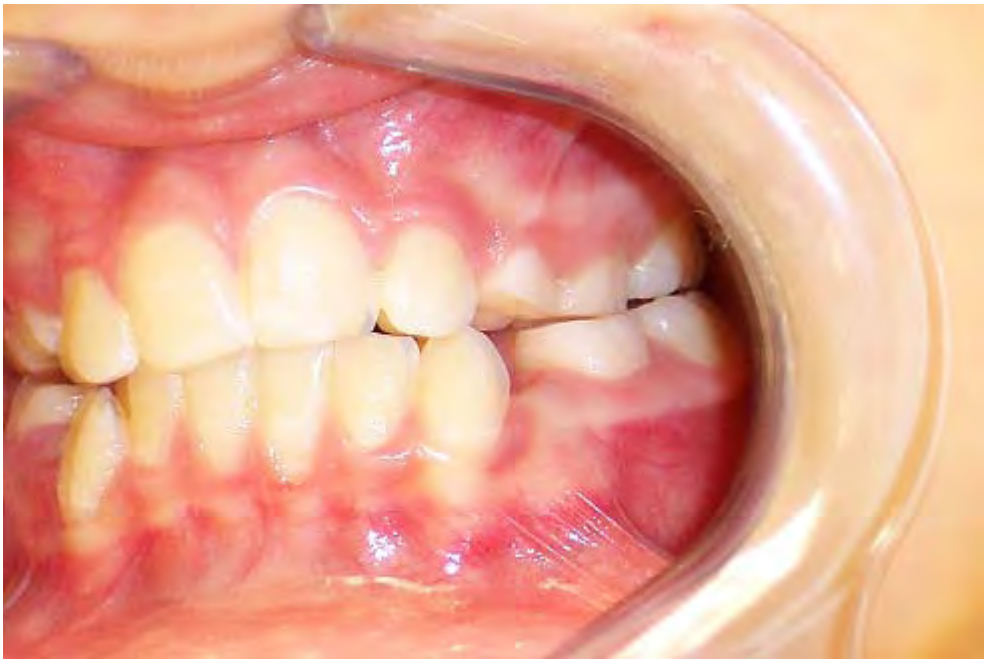


Fig. 3 Br. E.-M. 04.09.2006
(Photo Dr. Krenner Mauthausen 2006)

Fig. 4 Br. E.-M. 10-2003 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 5 Br. E.-M. 10-2003 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 6 Br. E.-M. 10-2003 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 7 Br. E.-M. 01-2005 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 8 Br. E.-M. 01-2005 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 9 Br. E.-M. 01-2005 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 10 Br. E.-M. 02-2006 (model of upper jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 11 Br. E.-M. 02-2006 (model of lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Fig. 12 Br. E.-M. 02-2006 (model of upper and lower jaw)
(Photo Dr. Krenner Mauthausen 2006)

Evaluationsheet:

Name: Br.E.-M. (9 Years)		Control Group	Malocclusion in Angle-Classes			
Date :	SBS-Frequency:	SBS- Lesion:	Class I	Class II/1	Class II/2	Class III
14.01.2004	7/ Minute	Superior Vertikal Strain			+	
10.02.2004	6/ Minute	Sidebending-Rotation Right			+	
23.03.2004	7/ Minute	Sidebending-Rotation Right			+	
18.05.2004	7/ Minute	Sidebending-Rotation Right			+	
17.06.2004	7/ Minute	Sidebending-Rotation Right			+	
17.08.2004	7/ Minute	Superior Vertikal Strain			+	
11.01.2005	7/ Minute	Sidebending-Rotation Right			+	
22.02.2005	7/ Minute	Sidebending-Rotation Right			+	
31.03.2005	8/ Minute	Sidebending-Rotation Right			+	
19.05.2005	8/ Minute	Sidebending-Rotation Right			+	
18.08.2005	7/ Minute	Sidebending-Rotation Right			+	
22.09.2005	7/ Minute	Sidebending-Rotation Right			+	
20.10.2005	7 Minute	Sidebending-Rotation Right			+	
17.11.2005	8/ Minute	Sidebending-Rotation Right			+	
13.12.2005	7/ Minute	Sidebending-Rotation Right			+	
17.01.2006	7/ Minute	Sidebending-Rotation Right			+	

(Dr. Krenner Mauthausen 2006)

1. Analysis - 22.01.2004

Name: Br. E.- M. (7 Years)			Control Group		
Remote X-Ray Analysis (21.09.2004)					
Facial Axis:	84.4°	(90°+/-3°)	Convexity:	"-2 mm	(+2mm+/-2)
Facial Depth:	84°	(87°+/-3°)	1/1 to APO:	2.4mm	(+1mm+/-2)
Mandibular Plane:	29.1°	(26°+/-4°)	1/1 Inclination to APO:	24°	(22°+/-4°)
Conical Angle:	66.8°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.4mm	(+1mm)
Lower Facial Height:	52.6°	(47°+/-4°)	Upper Molar to PTV:	4.9mm	Alter+3mm+/-2
Mandibular Arc:	31°	(27°+/-4°)	Condyloincisal Angle:	88.8°	(90°)
Maxillary Depth:	81.6°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-1mm	(-2mm+/-2mm)
Corpusaxis:	56.5mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-6mm	(-3.5mm)
Ramusposition:	68.9°	(76°+/-3°)	Porionlocalisation:	"- 27.1mm	(-39mm+/-2.2)
Craniale Deflexion:	28.3°	(27°+/-4°)	Ant.Cran. Base:	52.2mm	(55mm)
Posterior Fac.Height:	49.9mm	(55mm+/-3.3)	Palatinal Plane:	"-6°	(-1°+/-3.5°)
Hellgreen:	"-6mm	(-3mm)	Maxillary Height:	58°	(53°+/-3°)
Saddle Angle:	129°	(123°+/-5°)	Posterior Facial Height:	62.4mm	(55mm+/-3.3)
Articular Angle:	144°	(143°+/-6°)	Anterior Facial Height:	106mm	(Na-Me)
Gonion Angle:	127°	(130°+/-7°)	Rel. Facial Height:	58.9%	(62-65% d. vord.)
Anglesum:	400°	(396°+/-6°)	SN-Basion:	138°	(131°+/-4.5°)
Ant.Cr. Base Length:	62mm	(73mm+/-3mm)	Pal./Mand.Plane:	35°	(25°+/-6°)
Post.Cr. Base Length:	28.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	11.2°	(10°+/-4°)
Gonial Angle: (upper)	50.2°	(55°+/-2°)	Lower Occl.-Plane:	18.2°	(20°+/-5°)
Gonial Angle: (lower)	76.8°	(75°)	1-,-1 / Mand.Plane:	88.7°	(90°+/-3°)
Ramus Height:	36.9mm	(44mm+/-5mm)	1+,+1 / to SN:	102°	(102°+/-2°)
Body Length:	58.5mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	126°	(125°-130°)
SNA:	68.5°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9 zu 1	(1,1:1)
SNB:	70°	(80°)	ANB Diff:	"-1.5°	(2°)

(Dr. Krenner Mauthausen 2006)

2. Analysis - 14.02.2005

Name: Br. E.M. (8 Years)			Control Group		
Remote X-Ray Analysis (14.02.2005)					
Facial Axis:	85.8°	(90°+/-3°)	Convexity:	1.2mm	(+2mm+/-2)
Facial Depth:	84°	(87°+/-3°)	1/1 to APO:	"-0.4mm	(+1mm+/-2)
Mandibular Plane:	27.4°	(26°+/-4°)	1/1 Inclination to APO:	17.9°	(22°+/-4°)
Conical Angle:	68.5°	(67°+/-4°)	1/1 to Occlusion-Plane:	0mm	(+1mm)
Lower Facial Height:	50.4°	(47°+/-4°)	Upper Molar to PTV:	7.8mm	Alter+3mm+/-2
Mandibular Arc:	35.5°	(27°+/-4°)	Condyloincisal Angle:	93.1°	(90°)
Maxillary Depth:	85.5°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-4mm	(-2mm+/-2mm)
Corpusaxis:	58mm	(65mm+/-2.7)	Lip. / Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	69.6°	(76°+/-3°)	Porionlocalisation:	"- 32.4mm	(-39mm+/-2.2)
Craniale Deflexion:	28.7°	(27°+/-4°)	Ant.Cran. Base:	55.2mm	(55mm)
Posterior Fac.Height:	50.6mm	(55mm+/-3.3)	Palatinal Plane:	"- 5°	(-1°+/-3.5°)
Hellgreen:	0.1mm	(-3mm)	Maxillary Height:	53.6°	(53°+/-3°)
Saddle Angle:	126°	(123°+/-5°)	Posterior Facial Height:	61.8mm	(55mm+/-3.3)
Articular Angle:	158°	(143°+/-6°)	Anterior Facial Height:	106mm	(Na-Me)
Gonion Angle:	114°	(130°+/-7°)	Rel. Facial Height:	58.4%	(62-65% d. vord.)
Anglesum:	398°	(396°+/-6°)	SN-Basion:	136°	(131°+/-4.5°)
Ant.Cr. Base Length:	63.8mm	(73mm+/-3mm)	Pal./Mand.Plane:	32.4°	(25°+/-6°)
Post.Cr. Base Length:	29.2mm	(37mm+/-3mm)	Upper Occl.-Plane:	12.4°	(10°+/-4°)
Gonial Angle: (upper)	42.7°	(55°+/-2°)	Lower Occl.-Plane:	15.9°	(20°+/-5°)
Gonial Angle: (lower)	71.3°	(75°)	1-,-1 / Mand.Plane:	87.8°	(90°+/-3°)
Ramus Height:	33.7mm	(44mm+/-5mm)	1+,+1 / to SN:	96.7°	(102°+/-2°)
Body Length:	65.4mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	135°	(125°-130°)
SNA:	72.9°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	1 zu 1	(1,1:1)
SNB:	69.7°	(80°)	ANB Diff:	3.2°	(2°)

(Dr. Krenner Mauthausen 2006)

3. Analysis - 14.02.2006

Name: Br. E.-M. (9 Years)			Control Group		
Remote X-Ray Analysis (14.02.2006)					
Facial Axis:	86.9°	(90°+/-3°)	Convexity:	"-1mm	(+2mm+/-2)
Facial Depth:	83.1°	(87°+/-3°)	1/1 to APO:	0.7mm	(+1mm+/-2)
Mandibular Plane:	28.6°	(26°+/-4°)	1/1 Inclination to APO:	23.4°	(22°+/-4°)
Conical Angle:	68.2°	(67°+/-4°)	1/1 to Occlusion-Plane:	1.5mm	(+1mm)
Lower Facial Height:	50.1°	(47°+/-4°)	Upper Molar to PTV:	7mm	Alter+3mm+/-2
Mandibular Arc:	33.3°	(27°+/-4°)	Condyloincisal Angle:	89.9°	(90°)
Maxillary Depth:	81.5°	(90°+/-3°)	Lower Lip to Est.-Plane:	"-4mm	(-2mm+/-2mm)
Corpusaxis:	58.3mm	(65mm+/-2.7)	Lip./Occlusion-Plane:	"-3mm	(-3.5mm)
Ramusposition:	68.7°	(76°+/-3°)	Porionlocalisation:	"- 29.2mm	(-39mm+/-2.2)
Craniale Deflexion:	26.6°	(27°+/-4°)	Ant.Cran. Base:	56mm	(55mm)
Posterior Fac.Height:	51.3mm	(55mm+/-3.3)	Palatinal Plane:	"- 3°	(-1°+/-3.5°)
Hellgreen:	"-3mm	(-3mm)	Maxillary Height:	55.8°	(53°+/-3°)
Saddle Angle:	124°	(123°+/-5°)	Posterior Facial Height:	66mm	(55mm+/-3.3)
Articular Angle:	153°	(143°+/-6°)	Anterior Facial Height:	109mm	(Na-Me)
Gonion Angle:	120°	(130°+/-7°)	Rel. Facial Height:	60.7%	(62-65% d. vord.)
Anglesum:	397°	(396°+/-6°)	SN-Basion:	136°	(131°+/-4.5°)
Ant.Cr. Base Length:	64.2mm	(73mm+/-3mm)	Pal./Mand.Plane:	31.3°	(25°+/-6°)
Post.Cr. Base Length:	29.5mm	(37mm+/-3mm)	Upper Occl.-Plane:	13°	(10°+/-4°)
Gonial Angle: (upper)	46°	(55°+/-2°)	Lower Occl.-Plane:	18.3°	(20°+/-5°)
Gonial Angle: (lower)	74°	(75°)	1-,-1 / Mand.Plane:	90.2°	(90°+/-3°)
Ramus Height:	38.2mm	(44mm+/-5mm)	1+,+1 / to SN:	97.8°	(102°+/-2°)
Body Length:	63.6mm	(71mm+/-5mm)	Upp.1/1/lower 1/1 Angle:	133°	(125°-130°)
SNA:	71.2°	(82°+/-3,5°)	Mand.Body/Ant.Cr.Base:	0.9zu 1	(1,1:1)
SNB:	71.2°	(80°)	ANB Diff:	0°	(2°)

(Dr. Krenner Mauthausen 2006)

12) Chapter 12:

12.1) Statistic evaluation of data:

12.2) Evaluation of age distribution:

With the determination of the age the age of all patients was held at the time of the second analysis.

Age distribution in collective			
Research group		Control group	
	f 9		m 10
	f 9		m 10
	m 10		f 8
f female patient	m 10		f 8
m male patient	f 9		m 8
	f 10		f 10
	f 8		m 9
	f 11		m 9
	f 8		f 8
	m 8		
the average age was 9,2 Years	Total 92	the average age was 8,9 Years	Total 80
	average age 9,2		average age 8,9

Table 1 **Dr. Krenner Mauthausen 2006**

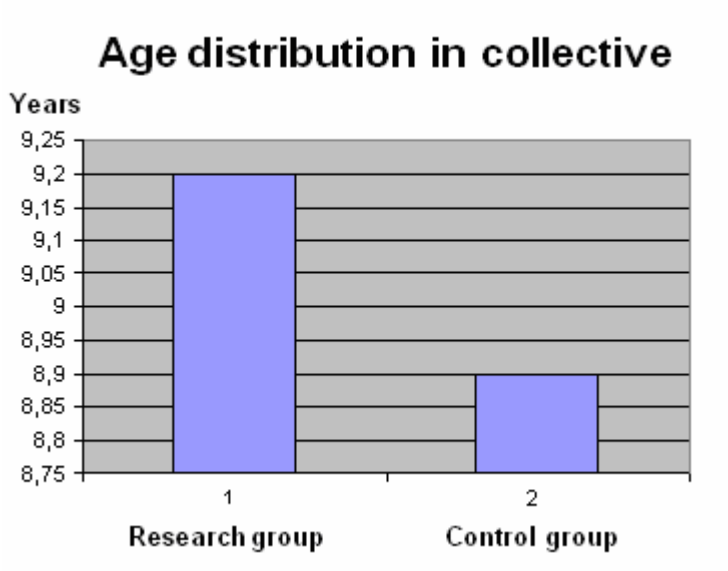


Table 2 **Dr. Krenner Mauthausen 2006**

The youngest patient was 8 years, the oldest 11 years

Age distribution Girls		
Research group the girls average age was 9,1 Years		**Control group** the girls average age was 8,5 Years
9		
9		
9		
10		8
8		8
11		10
8		8
Total 64		**Total** 34
average age 9,1		**average age** 8,5

Table 3 **Dr. Krenner Mauthausen 2006**

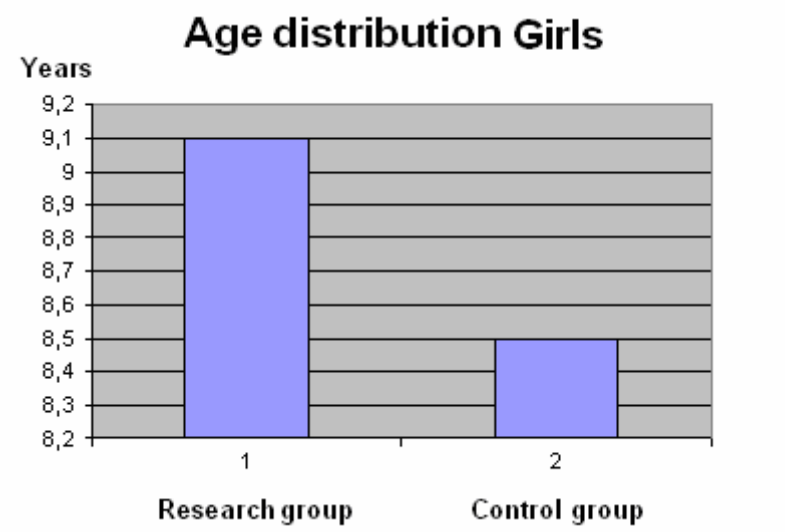


Table 4 **Dr. Krenner Mauthausen 2006**

Age distribution Boys	
Research group the boys average age was 9,3 Years	**Control group** the boys average age was 9,2 Years
	10
	10
10	8
10	9
8	9
Total 28	Total 46
average age 9,3	average age 9,2

Table 5 **Dr. Krenner Mauthausen 2006**

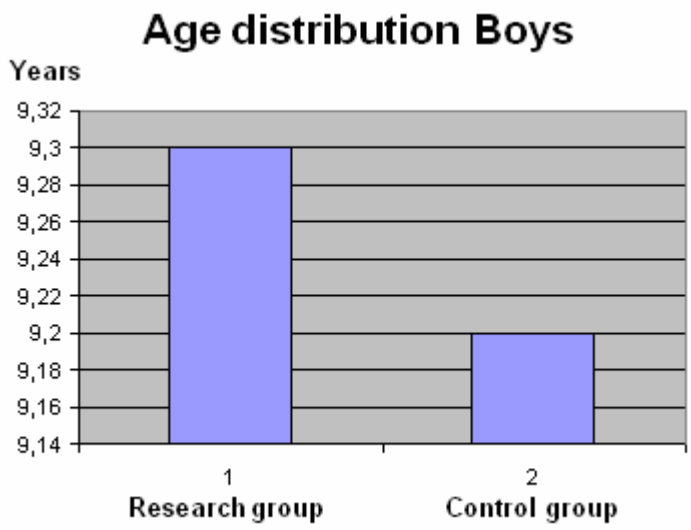


Table 6 **Dr. Krenner Mauthausen 2006**

12.3) Review of SBS lesions:

12.4) SBS lesions research group:

SBS les.-statistics	research group	statistics		
	SBS lesion:	Flexion Lesion	-- --	-- --
1) Ob.K. (10 Years)	Sidebending-Rotation right /Lateral Strain left	Extension Lesion	-- --	-- --
2) Ke. S. (10 Years)	Torsion left /Lateral Strain left	Torsion left	3	17,64
3) Hi. F. (11 Years)	Sidebending-Rotation right /Lateral Strain left	Torsion right	-- --	-- --
4) Gi. M. (11 Years)	Sidebending-Rotation right /Lateral Strain left	Sidebending-Rotation left	1	5,88
5) Ei. A. (10Years)	Sidebending-Rotation right	Sidebending-Rotation right	6	35,29
6) Re. A. (11 Years)	Sidebending-Rotation right /Torsion left	Inferior Vertical Strain	1	5,88
7) Lu. C. (10 Years)	Sidebending-Rotation right /Lateral Strain right	Superior Vertical Strain	1	5,88
8) St. M. (10 Years)	Sidebending-Rotation left / Inferior Vertical Strain	Lateral Strain left	4	23,52
9) Di. C. (9 Years)	Superior Vertical Strain	Lateral Strain right	1	5,88
10) Ma. D. (9 Years)	Torsion left	Compression	-- --	-- --
		Total	17	100%

Table 7 Dr. Krenner Mauthausen 2006

statistics
1 - Flexion Lesion
2 - Extension Lesion
3 - Torsion left
4 - Torsion right
5 - Sidebending-Rotation left
6 - Sidebending-Rotation right
7 - Inferior Vertical Strain
8 - Superior Vertical Strain
9 - Lateral Strain left
10 - Lateral Strain right
11 - Compression

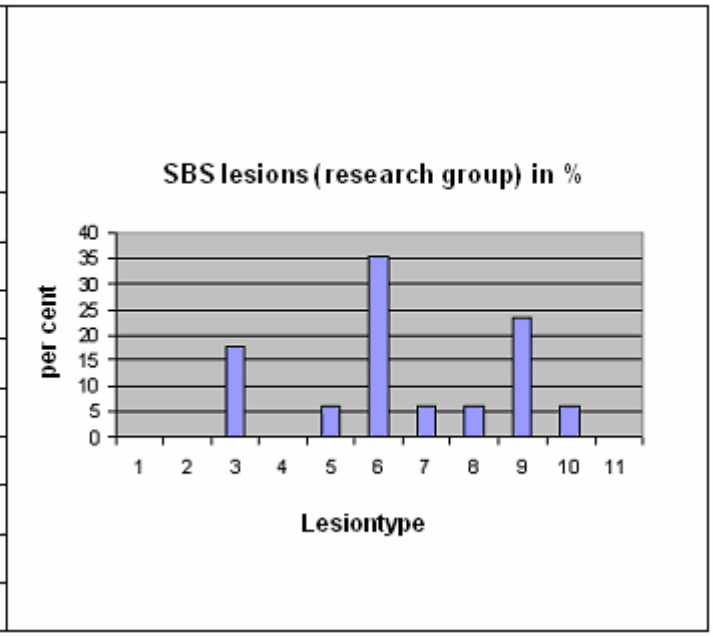


Table 8 Dr. Krenner Mauthausen 2006

12.5) SBS lesions control group:

SBS les.-statistics	Control group	statistics		
	SBS lesion:	Flexion Lesion	- -	- -
Ab. E. (11 Years)	Torsion left	Extension Lesion	- -	- -
La. Ph. (11 Years)	Sidebending-Rotation right	Torsion left	1	9,09 %
Au. L. (11 Years)	Compression / Sidebending-Rotation right	Torsion right	- -	- -
Ha. L. (8 Years)	Sidebending-Rotation left	Sidebending-Rotation left	3	27,00 %
Tr. J. (9 Years)	Sidebending-Rotation right	Sidebending-Rotation right	4	36,36 %
St. L. (9 Years)	Sidebending-Rotation left	Inferior Vertical Strain	- -	- -
Ha. C. (10 Years)	Sidebending-Rotation left	Superior Vertical Strain	1	9,09 %
Wö. B. (10 Years)	Lateral Strain right	Lateral Strain left	- -	- -
Br. E.-M. (9 Years)	Superior Vertical Strain / Sidebending-Rotation right	Lateral Strain right	1	9,09 %
		Compression	1	9,09 %
		Total	11	100,00 %

Table 9 Dr. Krenner Mauthausen 2006

statistics
1 - Flexion Lesion
2 - Extension Lesion
3 - Torsion left
4 - Torsion right
5 - Sidebending-Rotation left
6 - Sidebending-Rotation right
7 - Inferior Vertical Strain
8 - Superior Vertical Strain
9 - Lateral Strain left
10 - Lateral Strain right
11 - Compression

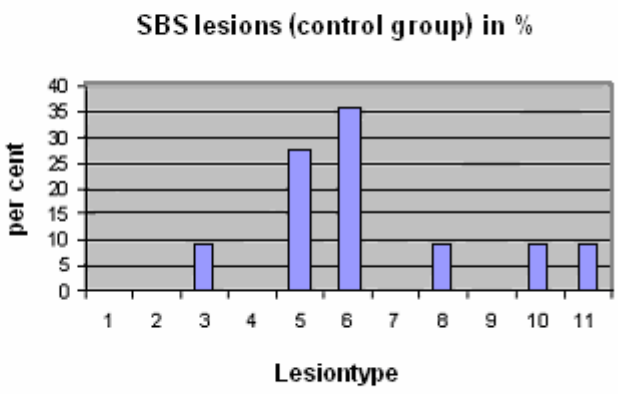


Table 10 Dr. Krenner Mauthausen 2006

Both in the research and in the control group the number of SBS lesions is higher than the total of test persons. This is due to the fact that several patients showed various SBS lesions within the observation period.

12.6) Comparison of SBS lesions – research and control group:

Flexion Lesion	--	--
Extension Lesion	--	--
Torsion left	4	14,28%
Torsion right	--	--
Sidebending-Rotation left	4	14,28%
Sidebending-Rotation right	10	35,71%
Inferior Vertical Strain	1	3,57%
Superior Vertical Strain	2	7,14%
Lateral Strain left	4	14,28%
Lateral Strain right	2	7,14%
Compression	1	3,57%
Total	28	100,00%

Table 11 Dr. Krenner Mauthausen 2006

statistics
1 - Flexionlesion
2 - Extensionlesion
3 - Torsion left
4 - Torsion right
5 - Sidebending-Rotation left
6 - Sidebending-Rotation right
7 - Inferior Vertical Strain
8 - Superior Vertical Strain
9 - Lateral Strain left
10 - Lateral Strain right
11 - Compression

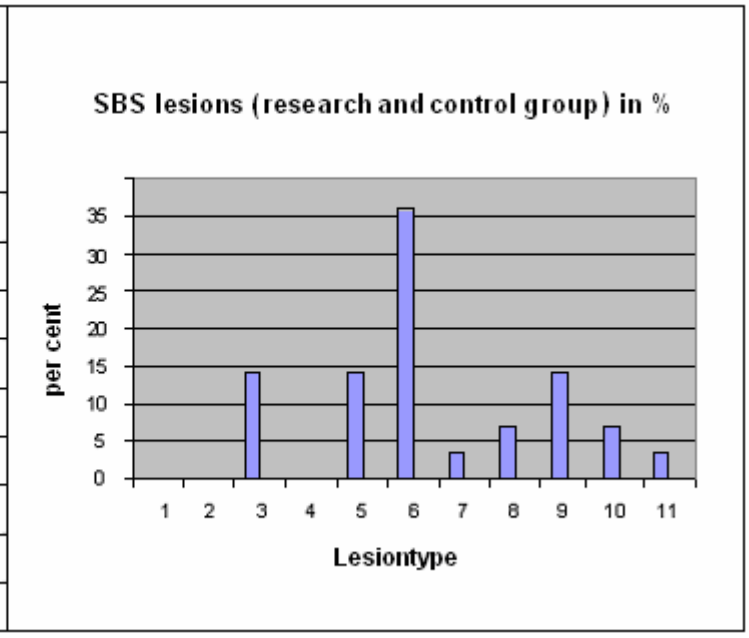


Table 12 Dr. Krenner Mauthausen 2006

12.7) Malocclusions:

12.8) Malocclusions in the research group:

	Research group			
Name:	Malocclusion in Angle Classes			
	Class I	**Class II/1**	**Class II/2**	**Class III**
1) Ob. K.	1			
2) Ke. S.	1			
3) Hi. F.	(from17.12.2005) 1		2	
4) Gi. M.	1			
5) Ei. A.	(from 25.08.2005) 1		2	
6) Re. A.	1			
7) Lu. C.	1			
8) St. M.	(from 17.01.2006) 1		2	
9) Di. C.	(from 18.08.2005) 1		2	
10) Ma. D.			2	
	Total a) 5		Total a) 5	
	in per cent: 50%		in per cent: 50%	
	Total b) 9		Total b) 1	
	in per cent: 90%		in per cent: 10%	

Table 13 Dr. Krenner Mauthausen 2006

Legend to Table 13

1 - Class I (Normocclusion) was achieved
2, or 3 - Class I was not achieved

The dates in brackets define the point of time class I was achieved!

Sum a) starting of treatment-period

Sum b) end of observation-period

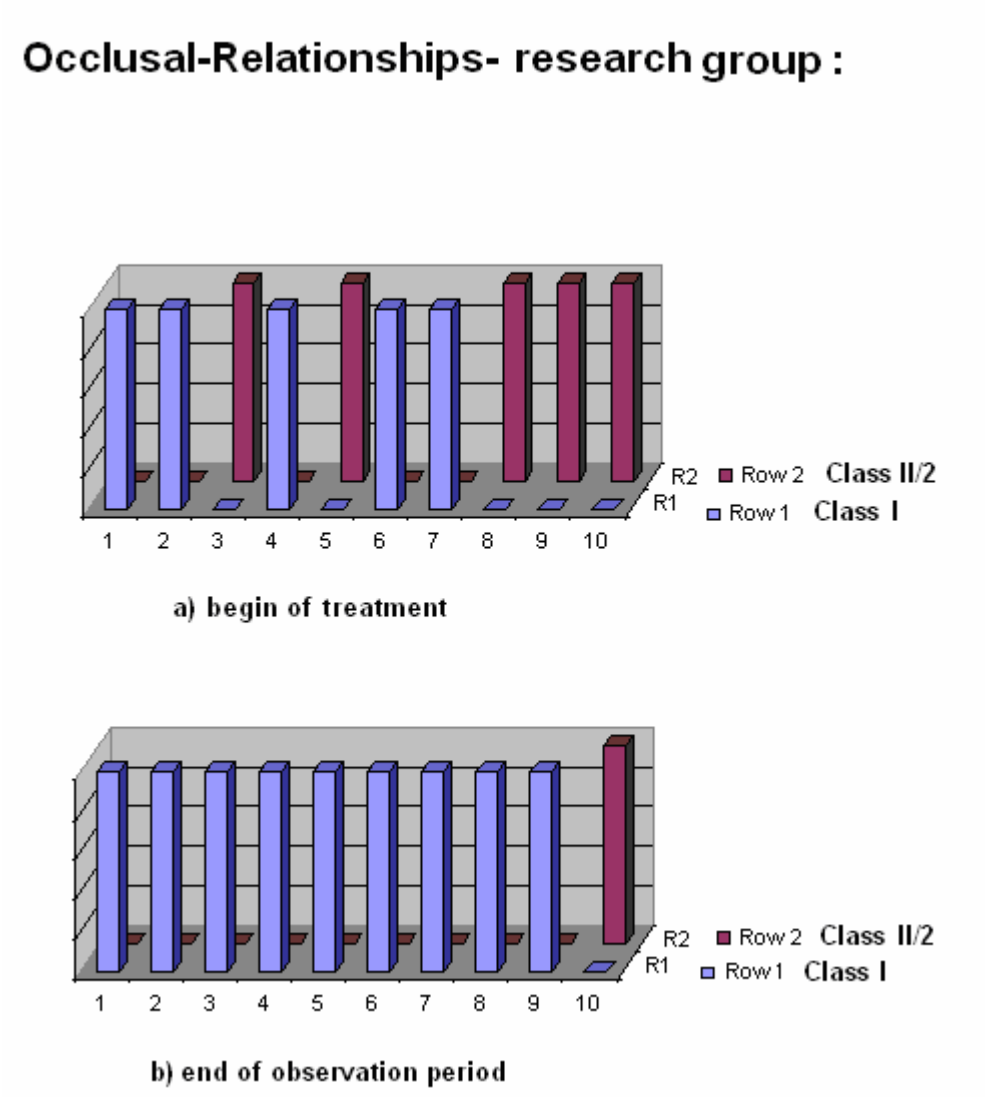


Table 14 **Dr. Krenner Mauthausen 2006**

Within a period of two years 90% of the test persons within the research group reached normal occlusion, while at the beginning of the treatment about 50% of the patients showed Class II/2.

12.9) Malocclusions in the control group:

	Control group			
Name:	Malocclusion in Angle Classes			
	Class I	Class II/1	Class II/2	Class III
1) Ab. E.	(from 29.08.2005) 1		2	
2) La. P.			2	
3) Au. L.			2	
4) Ha. L.	1			
5) Tr. J.		2		
6) St. L.			2	
7) Ha. C.			2	
8) Wö. B.			2	
9) Br. E.-M.			2	
	Total a) 1	Total a) 1	Total a) 7	
	in per cent: 11,11%	in per cent: 11,11%	in per cent: 77,7%	
	Total b) 2	Total b) 1	Total b) 6	
	in per cent: 22,22%	in per cent: 11,11%	in per cent: 66,6%	

Table 15 **Dr. Krenner Mauthausen 2006**

Legend to Table 15

1 - Class I (Normocclusion) was achieved
2, or 3 - Class I was not achieved

The dates in brackets define the point of time class I was achieved!

Sum a) starting of treatment-period

Sum b) end of observation-period

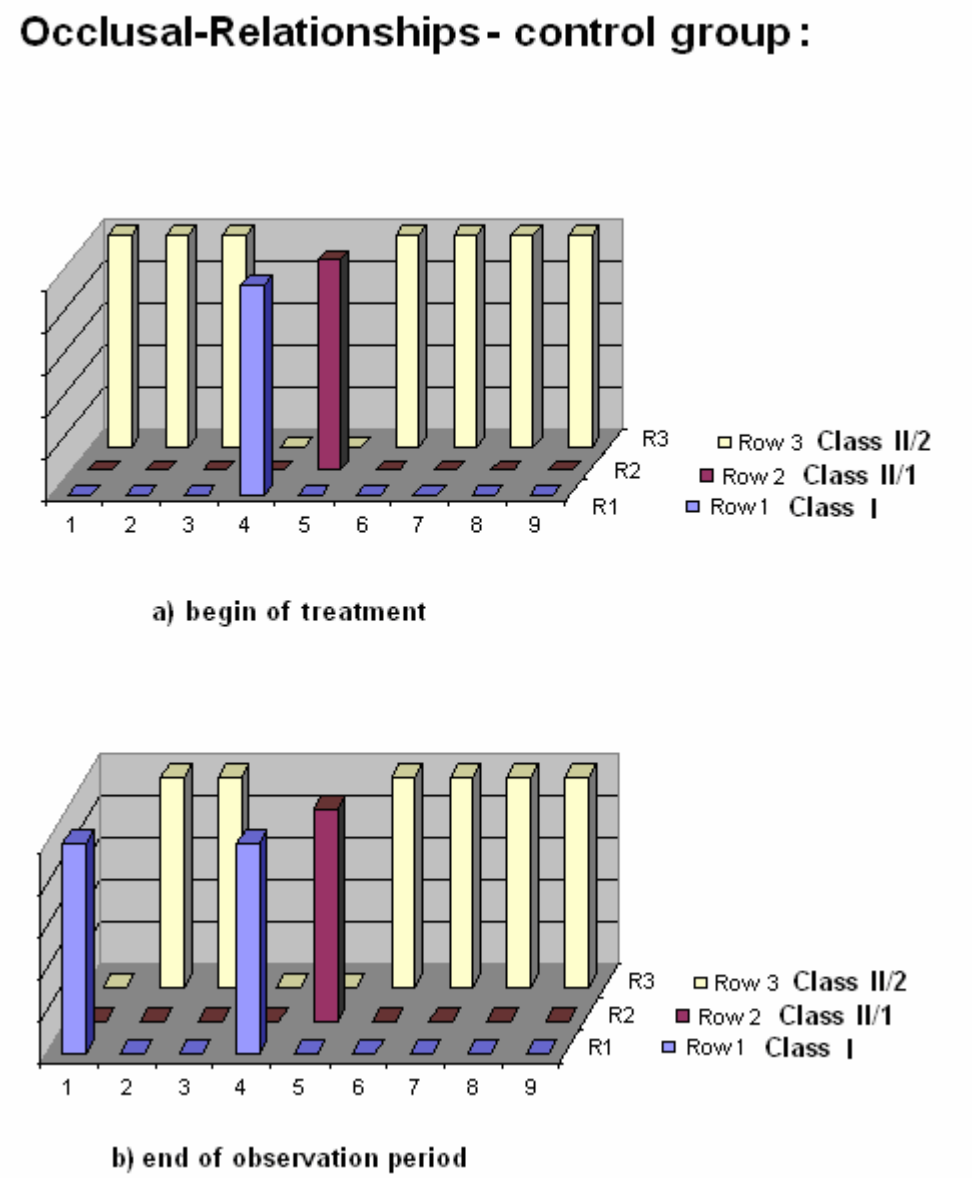


Table 16 **Dr. Krenner Mauthausen 2006**

Within a period of two years 22.2% of the test persons within the control group reached normal occlusion, while at the beginning of the treatment about 77.7% of the patients showed Class II/2 and 11.11% Class II/1.

12.10) Comparison of malocclusions–research and control group:

Research and Control group		
Malocclusion in Angle classes (before treatment)		
Class I	Class II/1	Class II/2
1	0	0
1	0	0
0	0	1
1	0	0
0	0	1
1	0	0
1	0	0
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
1	0	0
0	1	0
0	0	1
0	0	1
0	0	1
0	0	1
Total 6	Total 1	Total 12
in per cent : 31,57 %	in per cent : 5,26 %	in per cent : 63,16%

Table 17 **Dr. Krenner Mauthausen 2006**

The table shows that considering both groups there is a clear tendency of malocclusions towards Class II/2, with nearly one third of all malocclusions that require treatment being normal occlusion.

12.11) Review of SBS frequency:

12.12) SBS frequency-research group:

SBS- frequency- statistics		
	Research group	statistics
Name:	SBS-frequency	
Ob.K. (10Years)	min. 6 - max. 8 Rhythm / Minute	Meanvalue 7,6 Rhythm /min
Ke. S. (10Years)	min. 6 - max. 8 Rhythm / Minute	Meanvalue 7,3 Rhythm /min
Hi. F. (11Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,5 Rhythm /min
Gi. M. (11Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,5 Rhythm /min
Ei. A. (10Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,4 Rhythm /min
Re. A. (11Years)	min. 7 - max.12 Rhythm / Minute	Meanvalue 8,1 Rhythm /min
Lu. C. (10Years)	min. 6 - max. 8 Rhythm / Minute	Meanvalue 7,4 Rhythm /min
St. M. (10Years)	min. 6 - max. 9 Rhythm / Minute	Meanvalue 7,5 Rhythm /min
Di. C. (9Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,6 Rhythm /min
Ma. D. (9Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,4 Rhythm /min
The meanvalue of all SBS frequencies in the research group is 7,53 Rhythm/Minute		

Table 18 Dr. Krenner Mauthausen 2006

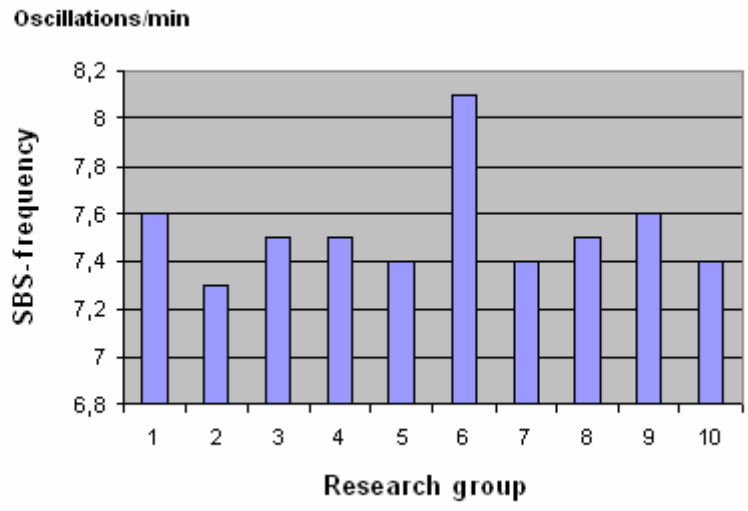
Name:	
1) Ob. K.	
2) Ke. S.	
3) Hi. F.	
4) Gi. M.	
5) Ei. A.	
6) Re. A.	
7) Lu. C.	
8) St. M.	
9) Di. C.	
10) Ma. D.	

Table 19 Dr. Krenner Mauthausen 2006

12.13) SBS frequency-control group:

SBS - frequency - statistics		
	Control group	statistics
Name:	SBS-frequency	
Ab. E. (11 Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,4 Rhythm /min
La. P. (11 Years)	min. 7 - max. 9 Rhythm / Minute	Meanvalue 7,7 Rhythm /min
Au. L. (11 Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,5 Rhythm /min
Ha. L. (8 Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,6 Rhythm /min
Tr. J. (9 Years)	min. 6 - max. 8 Rhythm / Minute	Meanvalue 7,4 Rhythm /min
St. L. (9 Years)	min. 6 - max. 9 Rhythm / Minute	Meanvalue 7,6 Rhythm /min
Ha. C. (10 Years)	min. 6 - max. 8 Rhythm / Minute	Meanvalue 7,2 Rhythm /min
Wö. B. (10 Years)	min. 7 - max. 8 Rhythm / Minute	Meanvalue 7,5 Rhythm /min
Br. E.-M. (9 Years)	min. 6 - max. 8 Rhythm / Minute	Meanvalue 7,1 Rhythm /min
The meanvalue of all SBS frequencies in the control group is 7,46 Rhythm/Minute		

Table 20 Dr. Krenner Mauthausen 2006

Name:
1) Ab. E.
2) La. P.
3) Au. L.
4) Ha. L.
5) Tr. J.
6) St. L.
7) Ha. C.
8) Wö. B.
9) Br. E.-M.

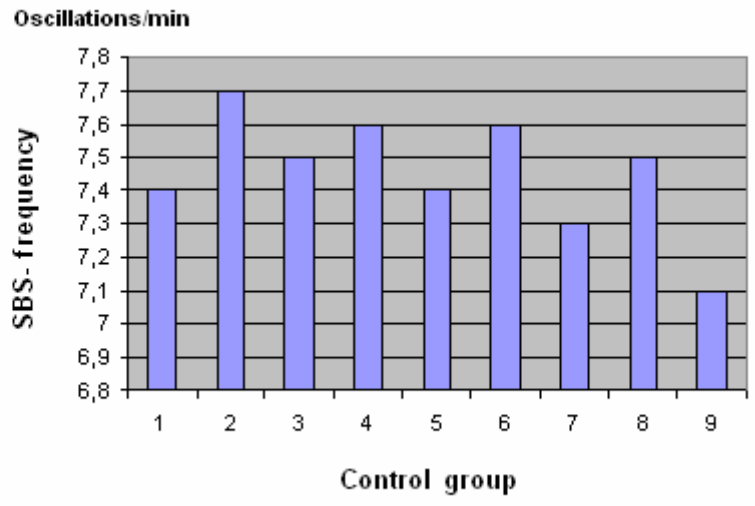


Table 21 Dr. Krenner Mauthausen 2006

The mean frequency of both the research and control group was 7.495 cycles per minute.

12.14) Review of data analysis:

The summation of all angular degrees is understood as the addition of all angular values from the individual analyses. The summation of the distances is also to be understood as the addition of the defined distances with only percentages and proportions being considered. (This includes also the anterior facial height)

12.15) Data analysis research group:

Total of angular degrees and distances evaluated by analysis and comparison against normvalues

Research group	Measured value	Normvalue	Measured value	Normvalue
	is °	should be °	is mm	should be mm
Ob. K.	6792,7	6870	1162,9	1269,5
Ke. S.	6924,4	6870	1170,2	1270,5
Hi. F.	6869,1	6870	1250,8	1272,5
Gi. M.	6856,2	6870	1197,2	1273,5
Ei.A.	6788,1	6870	1301,4	1270,5
Re. A.	6761,0	6870	1182,6	1273,5
Lu. C.	6787,2	6870	1198,0	1267,5
St. M.	6724,1	6870	1266,4	1276,5
Di. C.	6858,4	6870	1226,2	1266,5
Ma. D.	6828,9	6870	1191,7	1267,5
Total	a) 68190,1	b) 68700	c) 12147,4	d) 12708
Total b) resp. d)		68700 °		12708 mm
minus Total a) resp. c)		- 68190,1 °		- 12147,4 mm
Differences of Total e) und f)		e) - 509,9 °		f) - 560,6 mm

Table 22 Dr. Krenner Mauthausen 2006

In the research group the difference in the angular values from the norm values was -509,9 degrees. This value was established by a total of 870 measurements of angular degrees. For the distances the difference from the norm values was -560,6 millimeters. This value was established by a total of 480 measurements of distances.

Research group	
Total deviation of norm in angular degrees	- 509,9 °
Total number of measurement in angular degrees	870
Deviation of norm in angular degrees per measure	- 0,586 °
Total deviation of norm in millimeters	- 560,6 mm
Total number of measurement in millimeters	480
Deviation of norm in millimeters per measure	- 1,167 mm

Table 23 Dr. Krenner Mauthausen 2006

12.16) Data analysis control group:

Total of angular degrees and distances evaluated by analysis and comparison against normvalues				
Control group	Measured value	Normvalue	Measured value	Normvalue
	is °	should be °	is mm	should be mm
Ab. E.	6768,9	6870	1336,4	1272,5
La. P.	6831,2	6870	1250	1273,5
Au. L.	6830,3	6870	1221	1267,5
St. L.	6784,2	6870	1229	1273,5
Br. E.M.	6810,7	6870	1156,6	1267,5
Ha. C.	6741,1	6870	1233	1270,5
Wö. B.	7090,6	6870	1217,2	1270,5
Tr. J.	7065,9	6870	1281,8	1267,5
Ha. L.	6878,3	6870	1238,1	1265,5
Total	a) 61801,2	b) 61830	c) 11163,1	d) 11428,5
Total b) resp. d)		61830 °		11428,5 mm
minus Total a) resp. c)		- 61801,2 °		- 11163,1 mm
Differences of Total e) und f)		e) - 28,8 °		f) - 265,4 mm

Table 24 Dr. Krenner Mauthausen 2006

In the control group the difference in the angular values from the norm values is -28,8 degrees. This value was established by a total of 783 measurements of angular degrees. For the distances the difference from the norm values is -265,4 millimeters. This value was established by a total of 432 measurements of distances.

Control group	
Total deviation of norm in angular degrees	- 28,8 °
Total number of measurement in angular degrees	783
Deviation of norm in angular degrees per measure	- 0,0367 °
Total deviation of norm in millimeters	- 265,4 mm
Total number of measurement in millimeters	432
Deviation of norm in millimeters per measure	- 0,614 mm

Table 25 Dr. Krenner Mauthausen 2006

12.17) Comparison of data analysis for research group and control group:

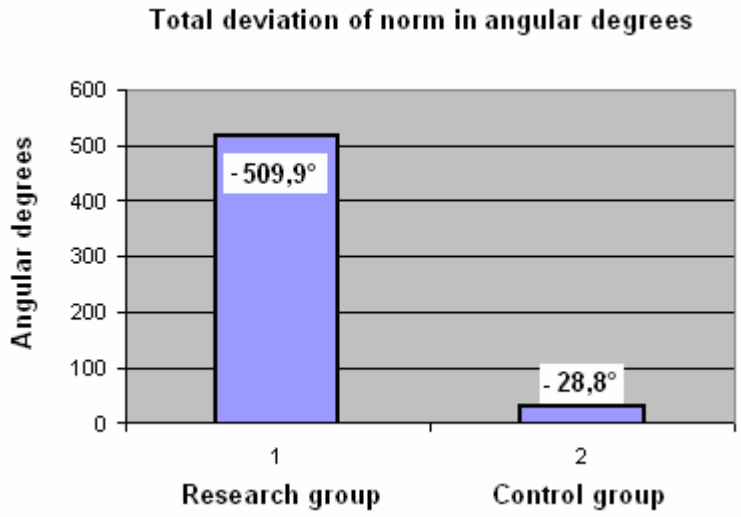


Table 26 Dr. Krenner Mauthausen 2006

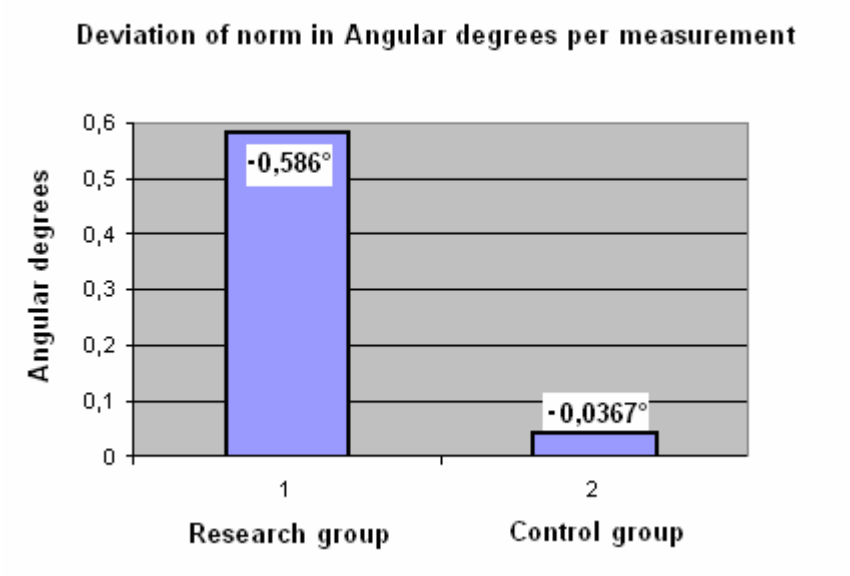


Table 27 **Dr. Krenner Mauthausen 2006**

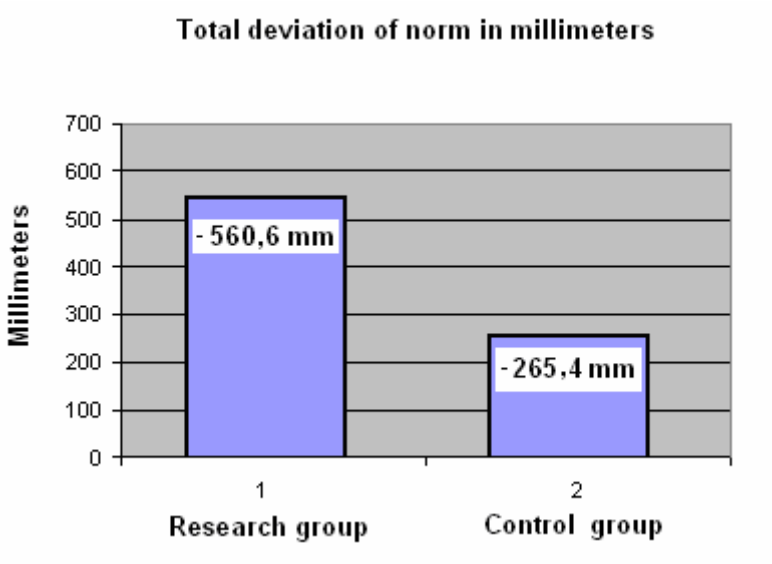


Table 28 **Dr. Krenner Mauthausen 2006**

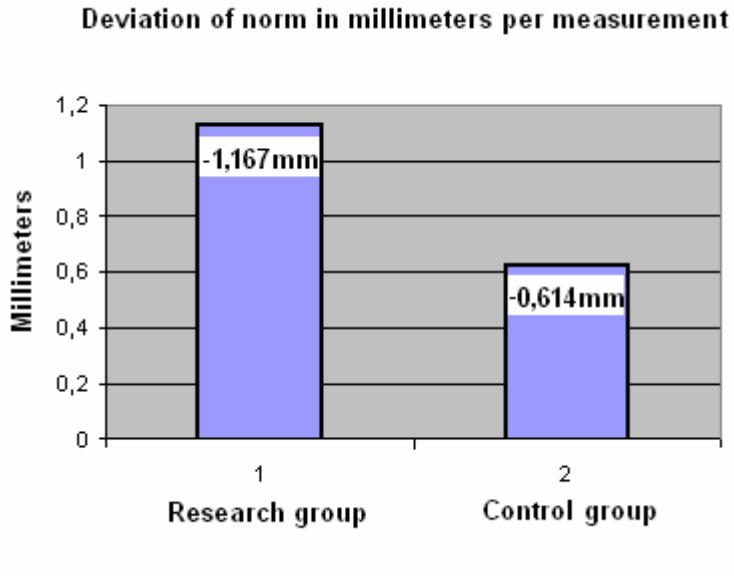


Table 29 **Dr. Krenner Mauthausen 2006**

13) Chapter13:

13.1) Discussion of data analysis:

13.2) Age distribution:

The average age of the groups to be evaluated (research and control group) differs only by 3 months, which allowed for a good comparison of the two groups. The age of the girls in the research group, however, was six months higher than that in the control group; the age of the boys in the research group, on the other hand, was only one month higher than that of the control group.

13.3) SBS lesions:

The **research group** showed a distinct tendency towards SBS lesions, i.e. side-bending rotation right, with dysfunction being 35%, lateral strain left lesion being 24% and torsion dysfunction left following third. The remaining SBS lesions were sidebending rotation left dysfunction, inferior vertical strain, superior vertical strain and lateral strain at 6% each.

In the **control group** sidebending rotation left dysfunction was also predominant with a rate of 36%, followed by a sidebending rotation left lesion at 27% and torsion left, superior vertical strain, lateral strain right and compression at 9% each.

When looking at the SBS dysfunction of **both groups together**, one could see that the sidebending rotation right dysfunction predominated at a rate of 36%, followed by torsion left, sidebending rotation left and lateral strain left. The last group consisted of superior vertical strain and lateral strain right, followed by one inferior vertical strain and one compression.

13.4) Malocclusions:

Of those people in the **research group** with dysgnathia 50% showed normal occlusion while 50% did not. At the **end of the research period 90%** had **reached normal occlusion**. In the **control group** 11.11% of the test persons had **Class I occlusion** at the time collection of data was started, at the **end of data collection 22.22%.** Here, a **clear discrepancy between research and control group** could be detected, i.e. in favor of the research group.
When looking at all the malocclusions in both groups, it can be seen that 63.16% of the malocclusions are Class II/2, while one third of the cases of dysgnathia that require treatment were classified as normal occlusion. There is only one person with a malocclusion Class II/1.

13.5) SBS frequency:

For the **research group** examined a rhythm with a frequency between 6 - 12 oscillations could be detected, with the mean frequency being **7,53 cycles/minute**. For the **control group** rhythms with a frequency ranging from 6 - 9 oscillations could be detected in the same period, with a mean frequency of **7,46 cycles/minute**. The **mean frequency** of both the **research and control group** was **7,495 cycles per minute**. With the exception of a very low number of measuring values, the series of measurements turned out to be very harmonious and balanced.

13.6) Evaluation of analysis measurement:

In examining the **research group**, the deviation in angular degrees from normal occlusion amounted to -509,9 degrees based on a total of 870 measurements. The average deviation per measurement from the norm value is -0,586 degrees.

The total deviation of distances from the norm value in millimeters that was measured at the same time amounted to -560,6 mm. Here the necessary number of individual measurements was 480. This results in a deviation per individual measurement of -1,167 mm.

By contrast, the **control group** showed a deviation in angular degrees from the norm value of only -28,8 degrees based on a total of 783 measurements. The deviation of -0,0367 degrees per measurement was neglect ably small!

The difference between the measured distances and the norm values amounted to -265,4 mm based on 432 measurements. Here the deviation per measurement amounted to -0,614 millimeters.

When comparing both groups there is a clear discrepancy when contrasting the malocclusions on the one hand and the deviations in angular degrees on the other. While the **research group** showed **normal occlusion in 90%** of all test persons following two years of treatment, this was **only** the case for **20%** of the test persons **in** the **control group**, **although** they **only** showed a **deviation in angular degrees of -0,0367 degrees and** only **-0.614 millimeters for** the **distances.** This means that the **deviation in angular values** of the **research group** was **17,7 times higher** and **for** the **distances, 2.11 times higher than** the values of the **control group.**

This could mean that despite the presence of a class I occlusion the norm values only have limited validity or that despite the existence of a malocclusion the values may be very close to the norm values.

From an **osteopathic point of view**, my **impression was confirmed** that a combination of both methods of treatment, i.e. **osteopathic and orthodontic therapy achieves** much **faster results** and **leads to** a **marked reduction in side effects for** the **patients.**

The problems that come up very often during therapy using orthodontic appliances only, e.g. tension headaches, neck problems, muscle hardening around the shoulders but also problems in the pelvic girdle have hardly ever been mentioned by the test persons in the research group.

14) Chapter14:

14.1) Reflection of methods:

- I am aware that the singular focus on the SBS reflected in this diploma thesis cannot be considered full-fledged osteopathic therapy in terms of a holistic osteopathic

approach. However, it was necessary to focus on the SBS in order to narrow down possible connections between dysgnathia and SBS lesions.

- Furthermore, I would like to stress, that the corresponding examinations could only reflect the current condition of the individual person and did in no way consider any social, emotional, mental or other influences.

- In addition to the parameters noted down in the data entry form, also the amplitude of SBS movements was determined and evaluated, both in a session with and without orthodontic appliance. Although it is perfectly possible to statistically analyze and compare individual oscillations during an examination, such a comparison over a longer observation period leaves a rather subjective impression both individually and collectively due to the lack of a clear measuring method. This is why I have decided not to make this part of my diploma thesis.
  However, I would like to mention that in the majority of cases a change in amplitude could be detected following the application of the orthodontic appliance, i.e. the SBS rhythm slowed down and the oscillation amplitude increased, which corresponds to a qualitative improvement of the vitality.

- Moreover, it would also be interesting to find out whether upon termination of any sort of therapy there was a change of the vitality parameters towards full recovery in the course of the treatment! -

- In addition to this I would also like to stress, that I used X-Ray pictures in addition to plaster models for evaluating cephalometric analyses. The data was recorded via a digital X-Ray device by Sirona and the evaluation aided by a computer-based orthodontic program by Primarius Dr. Hangl. In this context smaller accuracies due to the posture of the patient - despite positioning aids - and for X-ray evaluation due to unsharp contours of the X-ray pictures can never be completely excluded.

14.2) Thanks:

- Finally I would like to thank my greatly admired teacher Hanneke Nusselein for her continual support and efforts during the preparation of this work. She kept supporting me in word and deed. I would also like to mention my mentors Bernard Lignier, Raphael van Assche und Jean Arlot, as well as Sarah Wallace for her help and support in my professional development as osteopath.

- A special thank you to my wife without whose altruism, commitment and love I would not have been able to complete this sort of task.

14.3) Sources:

1 - **Still Andrew Taylor** – Das große Still-Kompendium, deutsche Erstausgabe 2002, Seite 176
2 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 42
3 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 49
4 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 50
5 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 50
6 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 51
7 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 52
8 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 80
9 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 190
10 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 191
11 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 192
12 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 192
13 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 195
14 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 201 and 202
15 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 - Page 213
16 - **W. G. Sutherland –** Teachings in the Science of Osteopathy – 1990 - Page 125
17 - **W. G. Sutherland –** Teachings in the Science of Osteopathy – 1990 - Page 126
18 - **Anthony D. Capobianco,** D.O. – The Cranial Letter, February 2003, Volume 56, Number 1, Page 10
19 - **Anthony D. Capobianco,** D.O. – The Cranial Letter, February 2003, Volume 56, Number 1, Page 12
20 - **Mark and Cherry Harris -** Introduction to Dental Orthopedics and Cephalometrics Sutherland Cranial College Newsletter – Spring 2002 Issue 10, Page 17
21 - **Mark and Cherry Harris -** Introduction to Dental Orthopedics and Cephalometrics Sutherland Cranial College Newsletter – Spring 2002 Issue 10, Page 18

22 - **Nicholas Handoll** – Anatomy of Potency –Osteopathy Supplies Ltd.-2001- Page 22
23 - **Nicholas Handoll** – Anatomy of Potency – Osteopathy Supplies Ltd.-2001- Page 22
24 - **Nicholas Handoll** – Anatomy of Potency – Osteopathy Supplies Ltd.-2001- Page 35 and 36
25 - **Harris M. Kimbrough, J**r., DDS. – The Cranial Letter, February 2002, Volume 55, Number 1, Page 12
26 - **T. Liem –** Praxis der kraniosakralen Osteopathie -2000, Seite 305
27 - **Harold I. Magoun –** Osteopathy in the Cranial Field –1976 Seite 141f
28 - **W. G. Sutherland –** Teachings in the Science of Osteopathy – 1990 - Page 151f
29 - **T. Liem –** Kraniosakrale Osteopathie -1998, Seite 451f
30 - **T. Liem –** Kraniosakrale Osteopathie -1998, Seite 218f und 288
31 - **Angle E.H.,**1899 Classification of malocclusion – Dental Cosmos 41:248-64,350-57
32 - **Ricketts, R.M.** An overview of computerized cephalometrics, Am.Journal Orthod. Vol.61. Nr.1 (1972)
33 - **Björk A.** The face in profile – Svensk. tandläk.T.– 40. Suppl. 5B, 1947
34 - Die kephalometrische Analyse nach **H.P. Bimler** als Grundlage der Stomatopädie 2.Auflage – Bimler, Wiesbaden 1973
35 - **Steiner, C.** – Cephalometrics for you and me – Jour. Orthod. Vol.39, 1953
36 - **Hangl A.** – Kieferorthopädische Diagnostik 1993 Seite 123
37 - **Jarabak J.R., Fizzel, J.A.**– Light–wire edgewise Appliance – Mosby, St.Louis1972
38 - **Stockfisch H.**– Rationelle Kieferorthopädie-Quintessenz Verlag-1985 Seite 133
39 - **Hangl A.** – Kieferorthopädische Diagnostik 1993 Seite 112
40 - **Hangl A.** – Kieferorthopädische Diagnostik 1993 Seite 102
41 - **Hangl A.** – Kieferorthopädische Diagnostik 1993 Seite 124
42 - **T. Liem –** Kraniosakrale Osteopathie -1998, Seite 289
43 - Der Elastisch-Offene-Aktivator-**G. Klammt –** Carl Hanser Verlag München –Wien Seite 11

additional literature:

- **Fryman V.,** DO, -The Expanding Osteopathic Concept, The Cranial Academy 1960
- **Sutherland, Adah Strand and Wales** DO, **Anne L**. (ed.s): Contributions of Thought, 2nd Edition, The Sutherland Cranial Teaching Foundation 1998
- **Still, A. T.** - Autobiography of Andrew Taylor Still Kirksville, MO, 1897
- **Batshaw, Mark L**. MD. (ed.): - Children with Disabilities, 4th Ed., Paul H. Brookes Pub. Co. Baltimore P 500
- **Becker Rollin E.**, DO, - " Craniosacral Trauma in the Adult " ed. R. Feely, DO, Meridian, Idaho, The Cranial Academy 1988
- **Jealous Jim**, DO, - Elective Lecture on Osteopathy in the Cranial Field, University of New England College of Osteopathic Medicine, Maine mid-1980s.