JULY 2020

Dr. Petros Kokkinos

Age: 37 YO

Occupation:

Date of the first visit: JULY 2020

Chief Complaint: PAIN IN LEFT JOINT

# Findings Initial-Diagnostics

OLGA ALKHINA 9/9/1992
Patient date of birth

## Special Medical Analysis

Do you have or did you ever have an illness with regard to points 1-12?

| | yes | no | | yes | no |
|---|---|---|---|---|---|
| 1. Infections | | X | 7. Urogenital problems | | X |
| 2. Cardio-vascular systems | | X | 8. Central nervous systems | | X |
| 3. Respiratory systems | | X | 9. Psychological problems (theraphy) | | X |
| 4. Digestive systems | | X | 10. Rheumatic disease | | X |
| 5. Metabolic systems | | X | 11. Hormonal disease | | X |
| 6. Allergies | X | | 12. Special problems | | X |

**Main concern** PAIN IN LEFT JOINT

## Dental History Analysis

| | | valuation | yes | no |
|---|---|---|---|---|
| 1. | Do you have problems when you chew? | | | X |
| 2. | Do you have problems when you are talking? | | | X |
| 3. | Do you have problems in closing your teeth properly? | | | X |
| 4. | Are any of your teeth especially sensitive? | 1 | X | |
| 5. | Do you have a problem when you open your mouth very wide? | | | X |
| 6. | Do your jaw joints make noise and if so, on what side? | 1 | X | |
| 7. | Do you have pain in the area of your jaw joints? RIGHT | 1 | X | |
| 8. | Do you suffer from headaches? | 1 | X | |
| 9. | Do you suffer from cramps or spasm in your head, neck or throat? | 1 | X | |
| 10. | Do you have in general problems with your posture? | | | X |
| | Occlusal Index | 1.00 | | |

| | | yes | no |
|---|---|---|---|
| 11. | Have you ever had a serious accident? | | X |
| 12. | Did you have one or more oral intubations? | X | |
| 13. | Have you ever had orthodontic treatment or... 11YO | X | |
| 14. | Have you had a treatment with a splint? | | X |
| 15. | Are you grinding or pressing with your teeth? | | X |
| 16. | Do you think that treatment is necessary? | X | |
| 17. | Do you think that there is a serious disorder or illness? | | X |

18. When was the last time you had dental treatment and what was done?
30 MIN FOR CLEANING

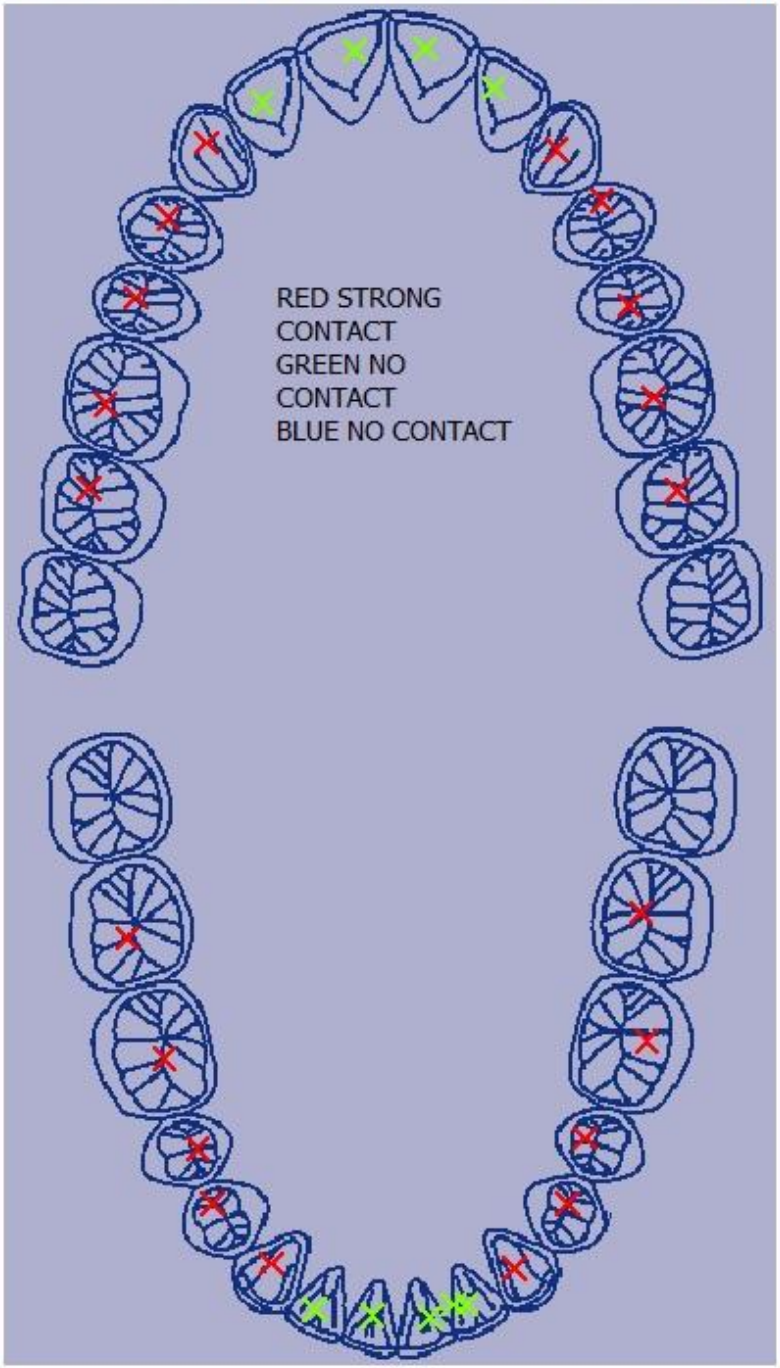
19. How would you describe your psychic behaviour?
[X] happy [ ] sad [ ] calm [ ] excited [ ] self-controlled [ ] lack of self control

## Muscle Diagnosis

| | | right | | left | |
|---|---|---|---|---|---|
| | | + | ++ | + | ++ |
| 1. | shoulders and neck | | | | |
| 2. | atlanto-occipital region | | | | |
| 3.a | M.temporalis ant. IO L/R | | | | |
| 3.b | M.temporalis med. | | | | |
| 3.c | M.temporalis post. | | | | |
| 4.a | M.masseter (superficial) | | | | |
| 4.b | M.masseter (deep) | | | | |
| 5. | Tuber maxillae | X | | | X |
| 6. | M.pterygoideus medialis | | | | |
| 7. | M.mylohyoideus | | | | |
| 8. | M.digastricus | X | | | |
| 9. | suprahyoidale M. | | | | |
| 10. | infrahyoidale M. | | | | |
| 11. | Larynx | X | | X | |
| 12. | M.sterno-cleido-mastoideus | | | | |
| 13. | M.omohyoideus | | | | |
| 14. | Tongue | | | | |

| | | right | | left | |
|---|---|---|---|---|---|
| | | + | ++ | + | ++ |
| 15. | comparative palpation of jaw joints | | | | |
| | a) lateral poles, statically | | | | |
| | b) lateral poles, in rotation | | | | |
| | c) retral joint space | | | X | |
| | d) Lig.temporo-mandibulare | | | | |

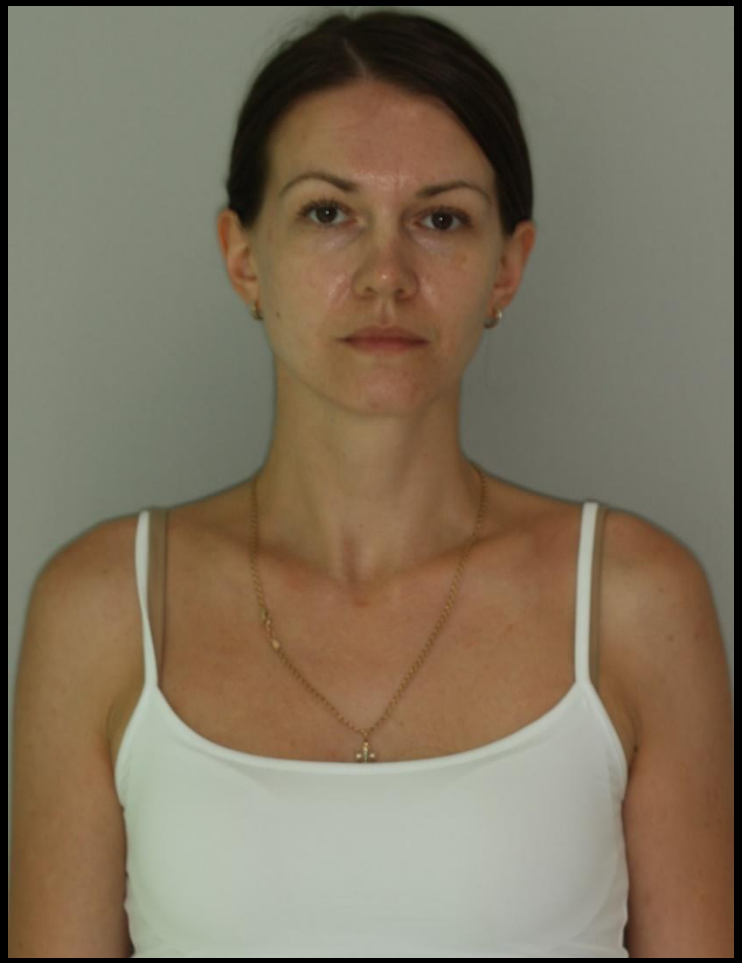
## Tooth Status - Periodontal Status - Occlusogram



# Occlusogram




# Frontal View



Patient's picture,
with/without smile

# 45˚ View

Patient's picture,
with/without smile

# Profile

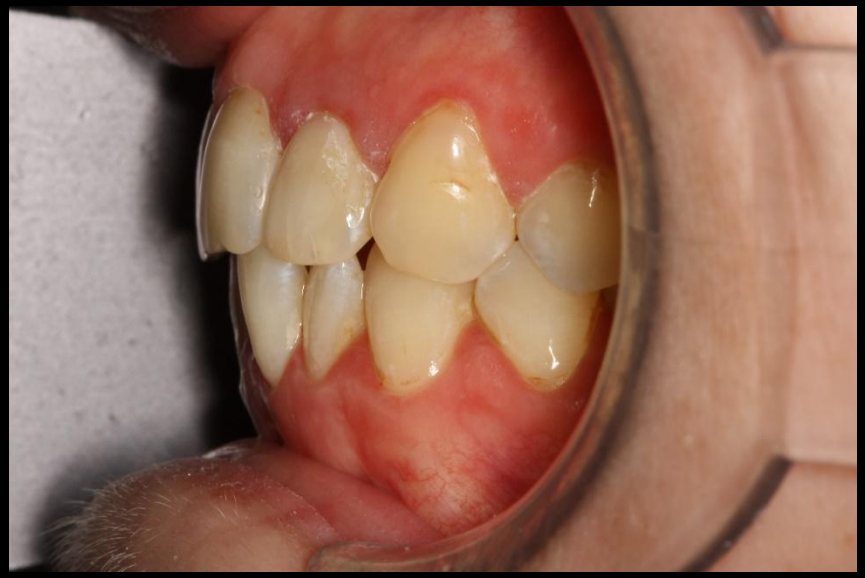
# Frontal View Intraoral

# Lateral View

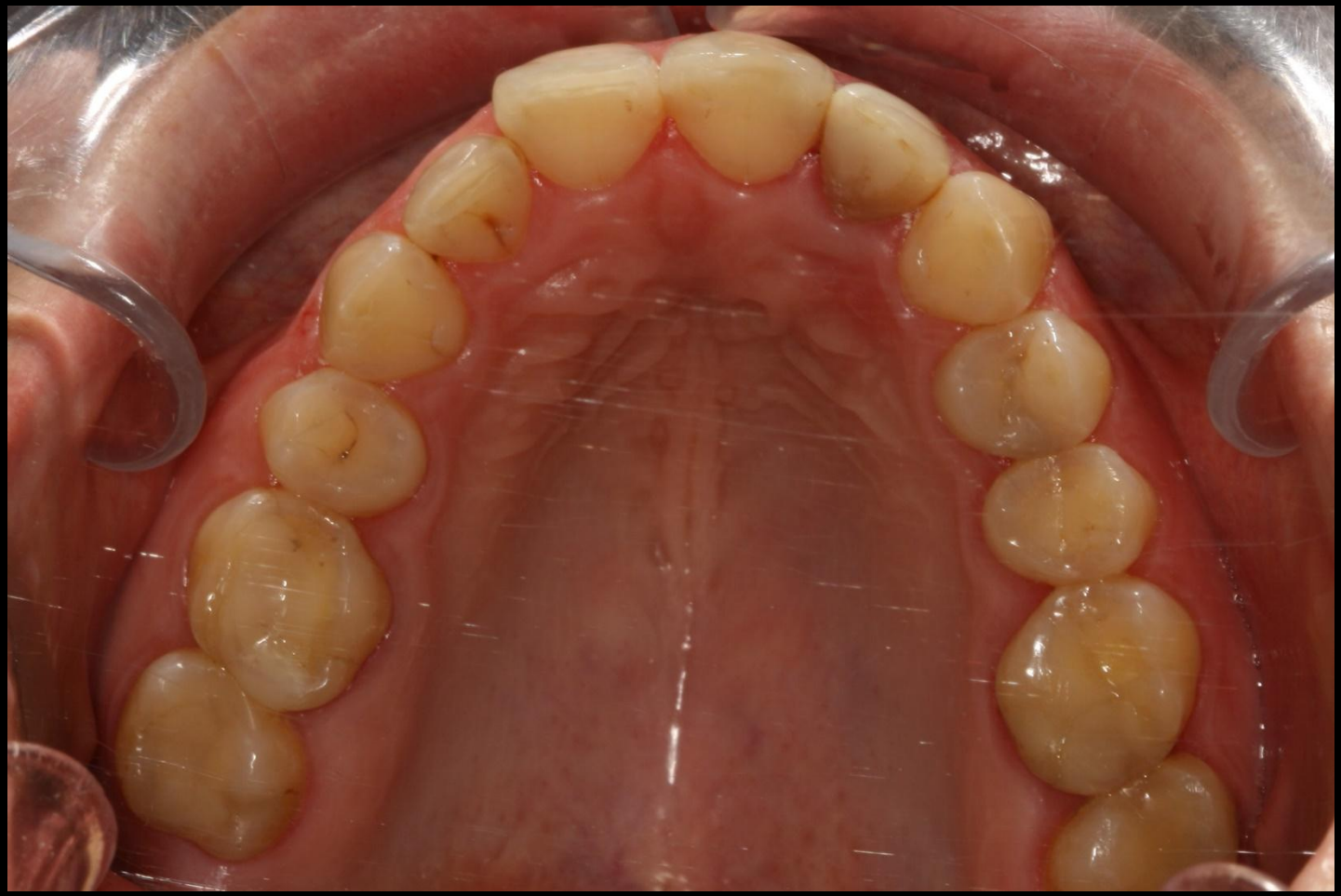
right

left

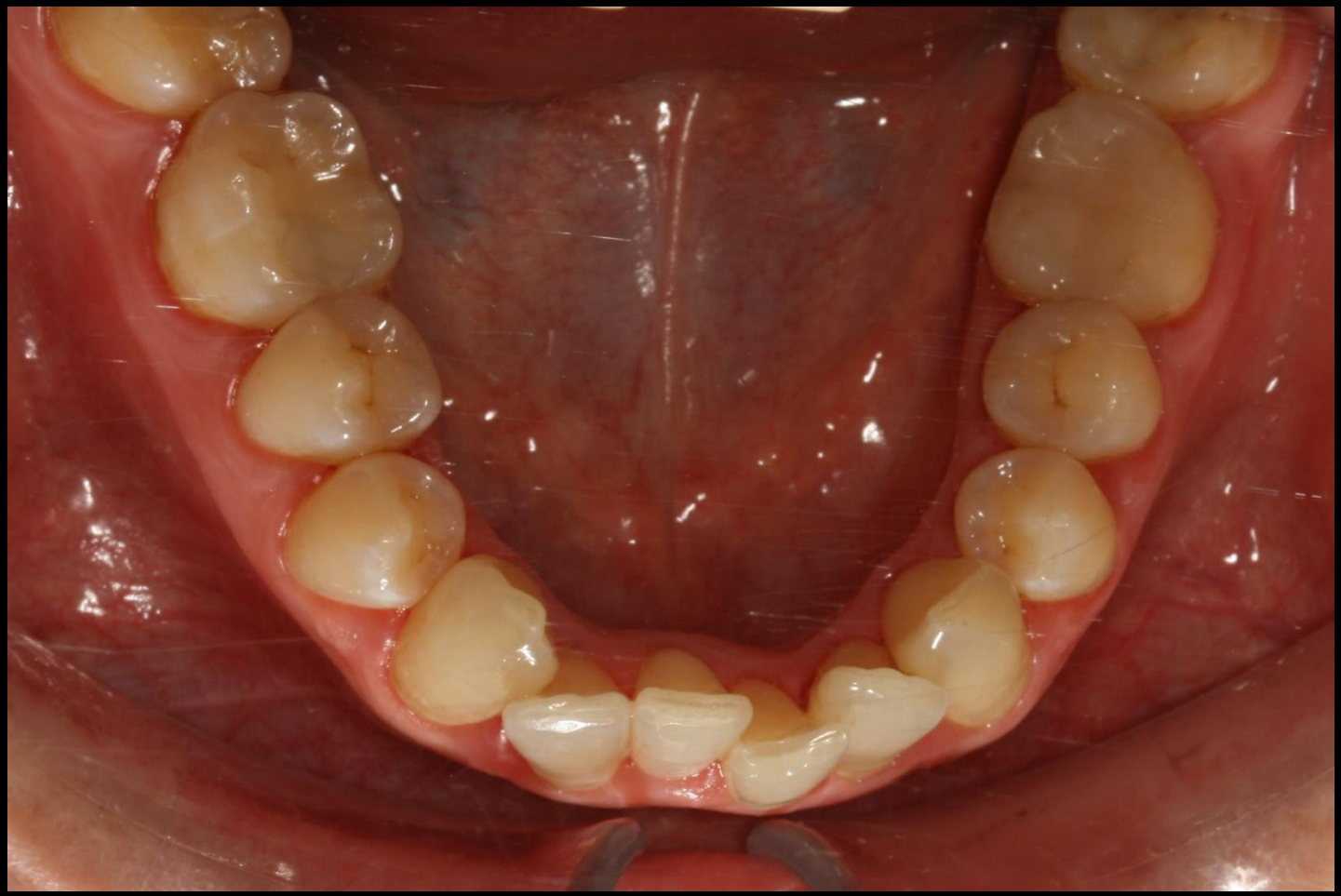
# Overjet and Overbite



# Occlusal View of the Upper Arch



# Occlusal View of the Lower Arch



# Panoramic X-Ray – Pre tx


351494 : Alkhina Olga

7/16/20 66.0kV 8.0mA 15.8s 101.1mGy×cm²

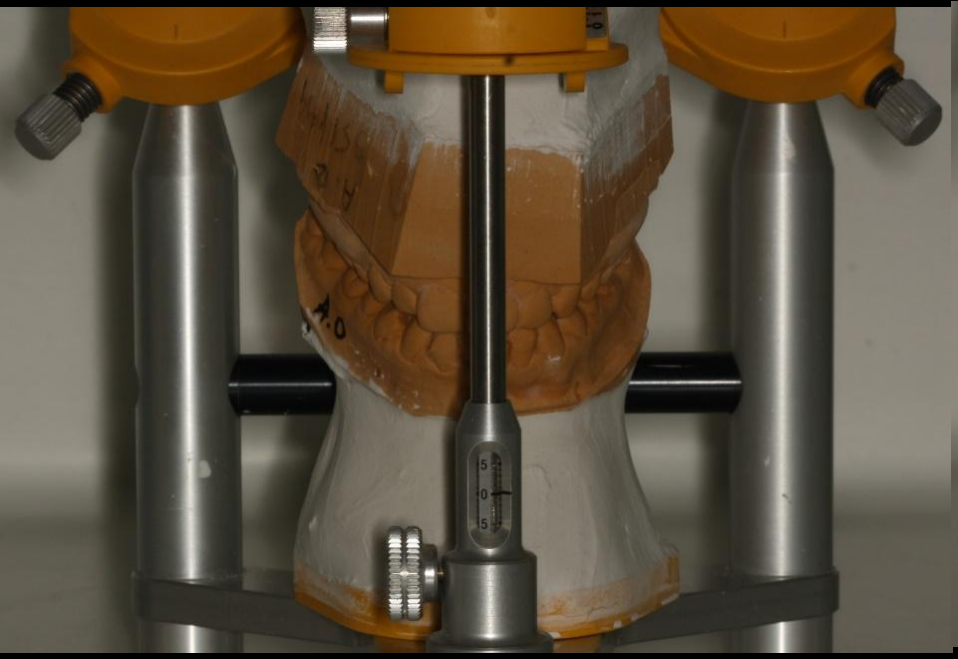
Provider Default

# Right and Left Joints

# Upper  Cast, Occlusal View

# Lower cast, occlusal view

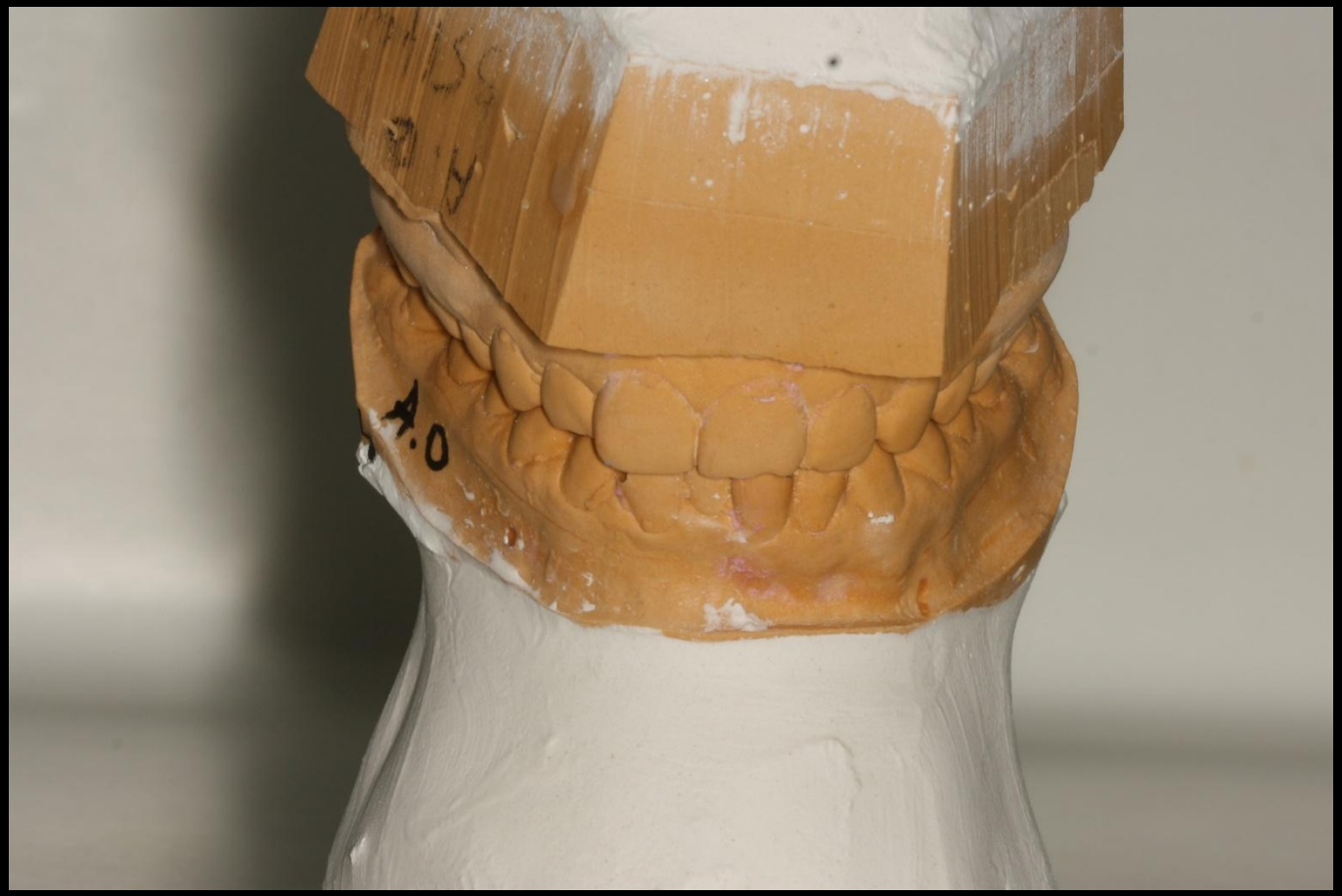
# RP mounted casts, frontal view



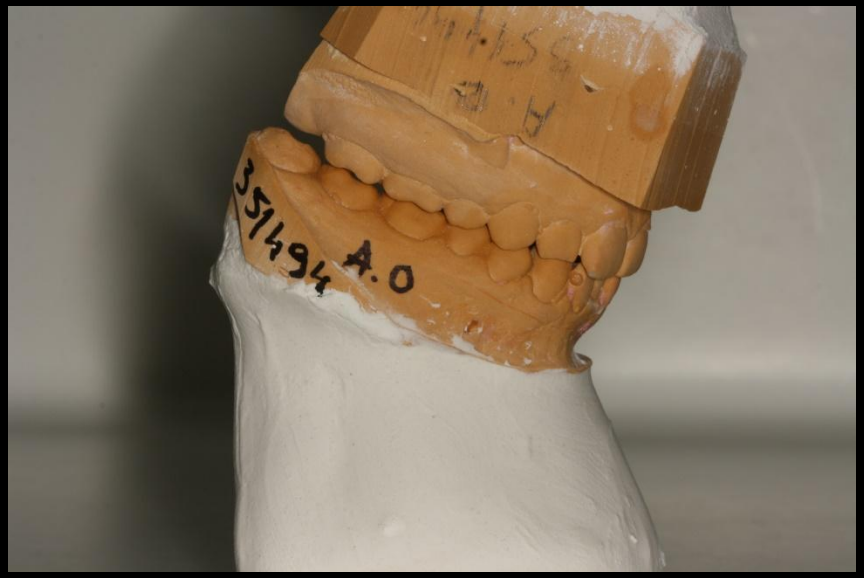
# RP mounted casts, lateral view

# RP mounted casts, posterior view

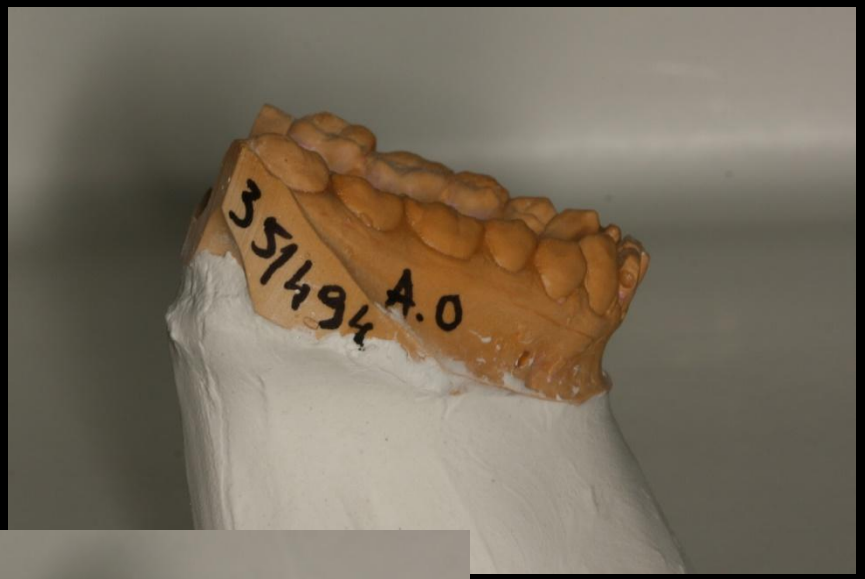
# ICP Mounted casts, frontal view

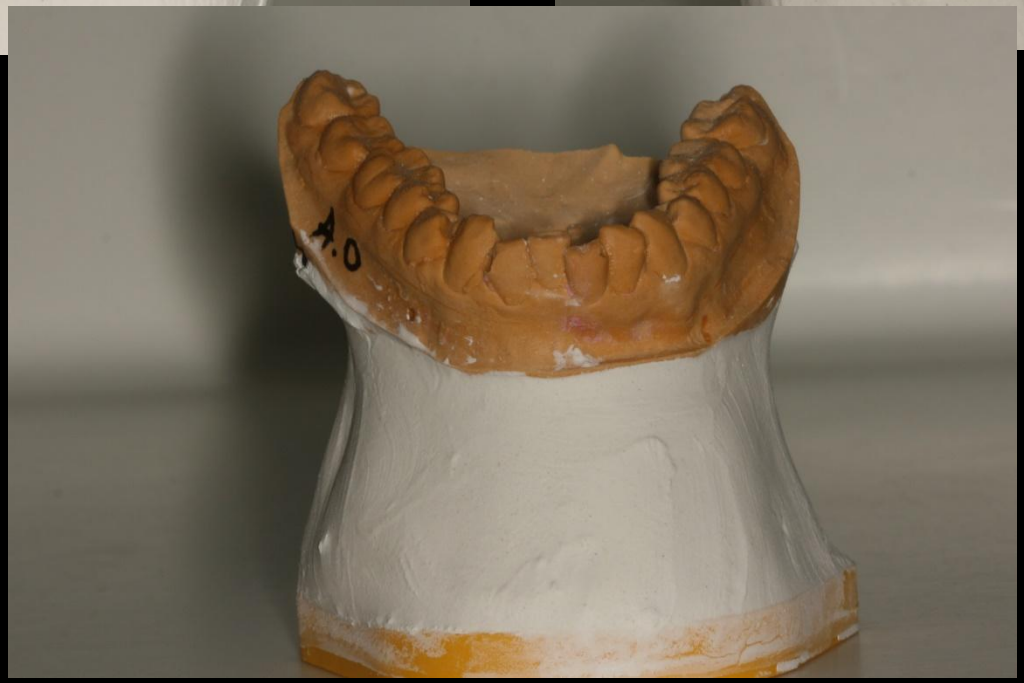


# ICP Mounted casts, lateral view

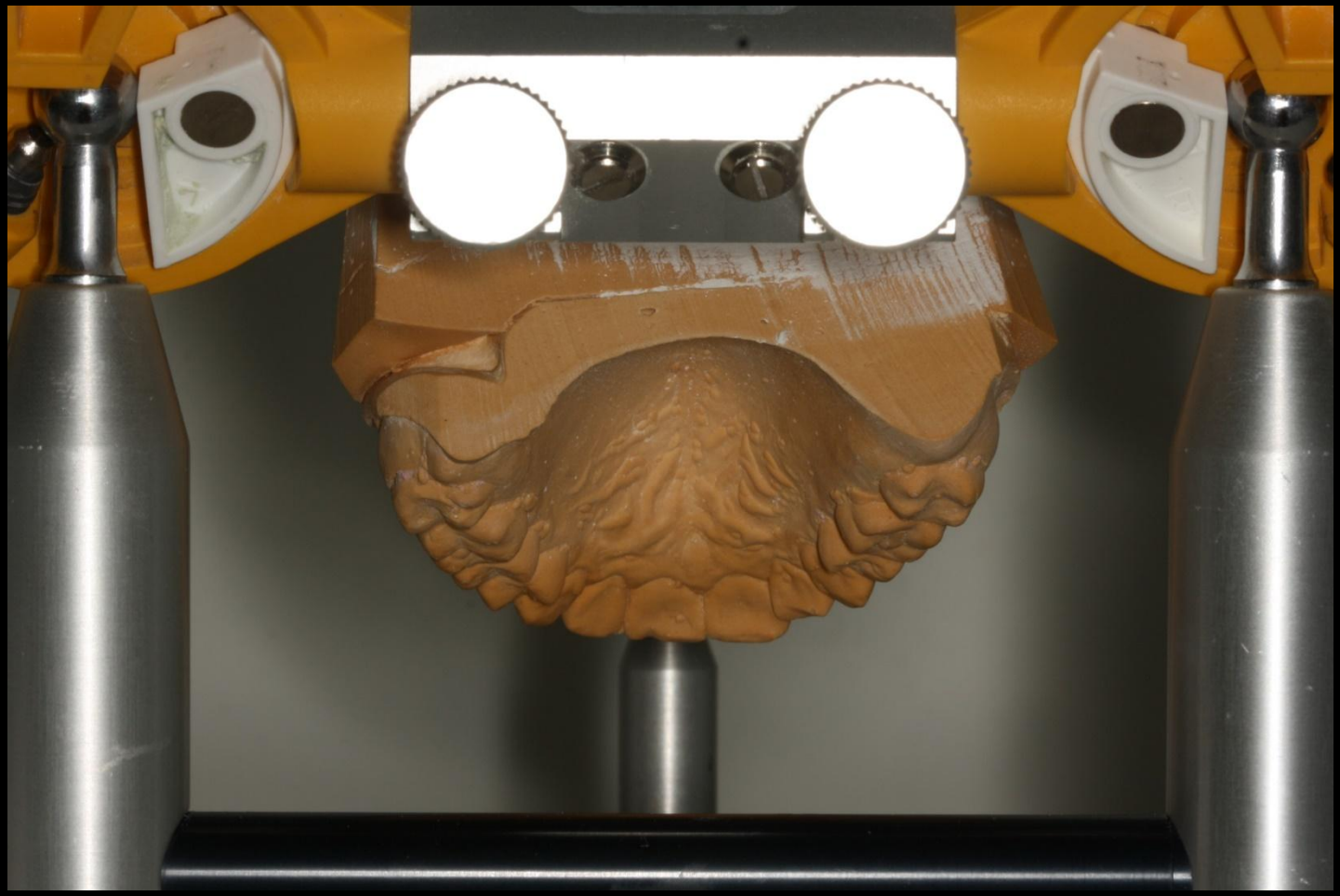



# Curve of Spee

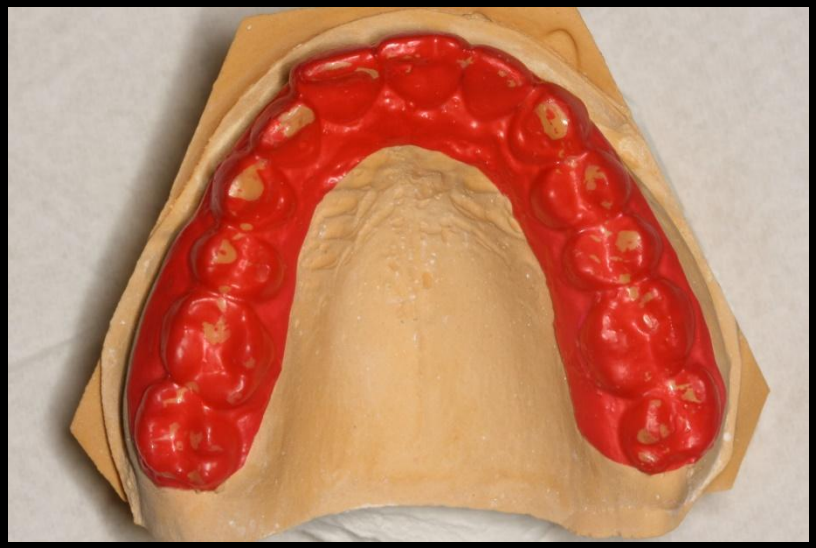


# Curve of Wilson

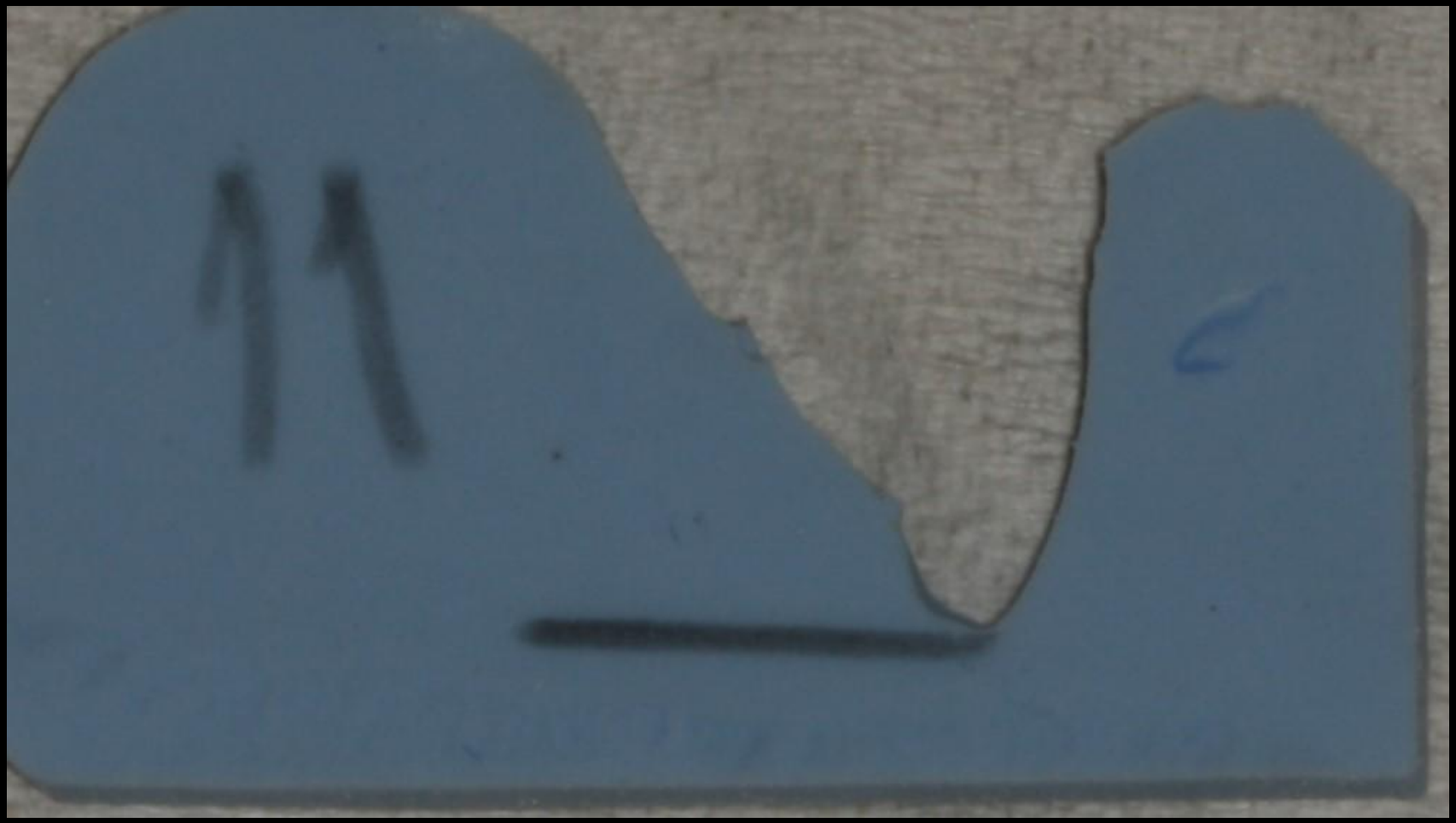


# Bruxcheckers Upper



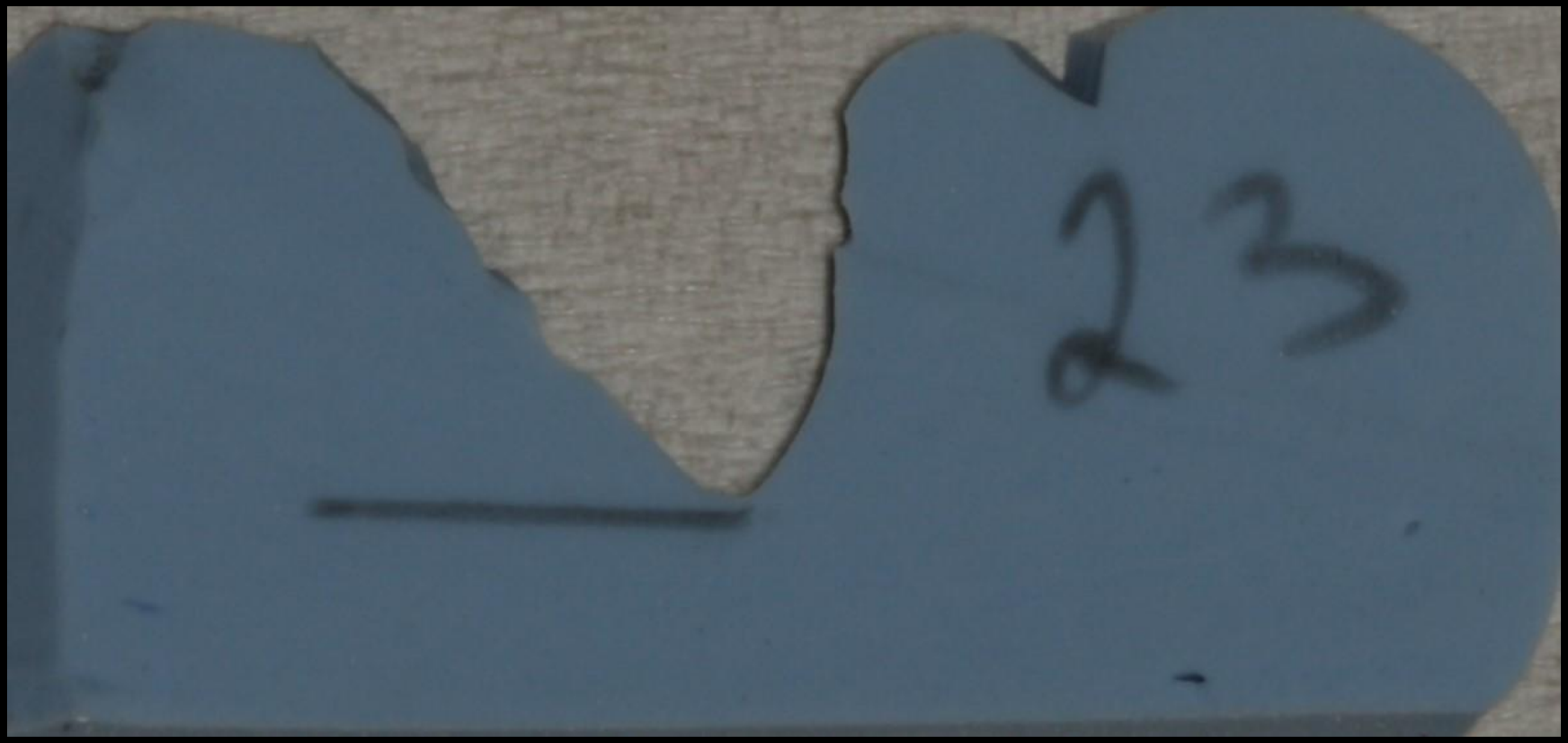
# Bruxcheckers Lower

# Anterior control

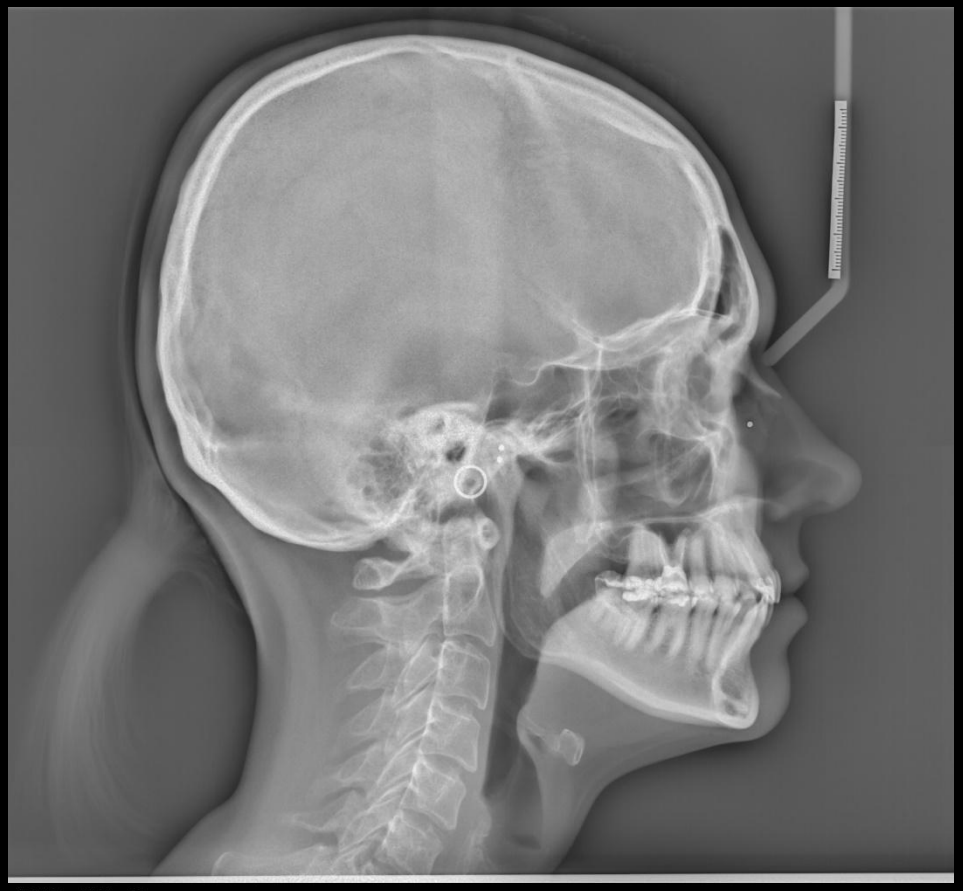


# CANINE GUIDANCE=49.2°

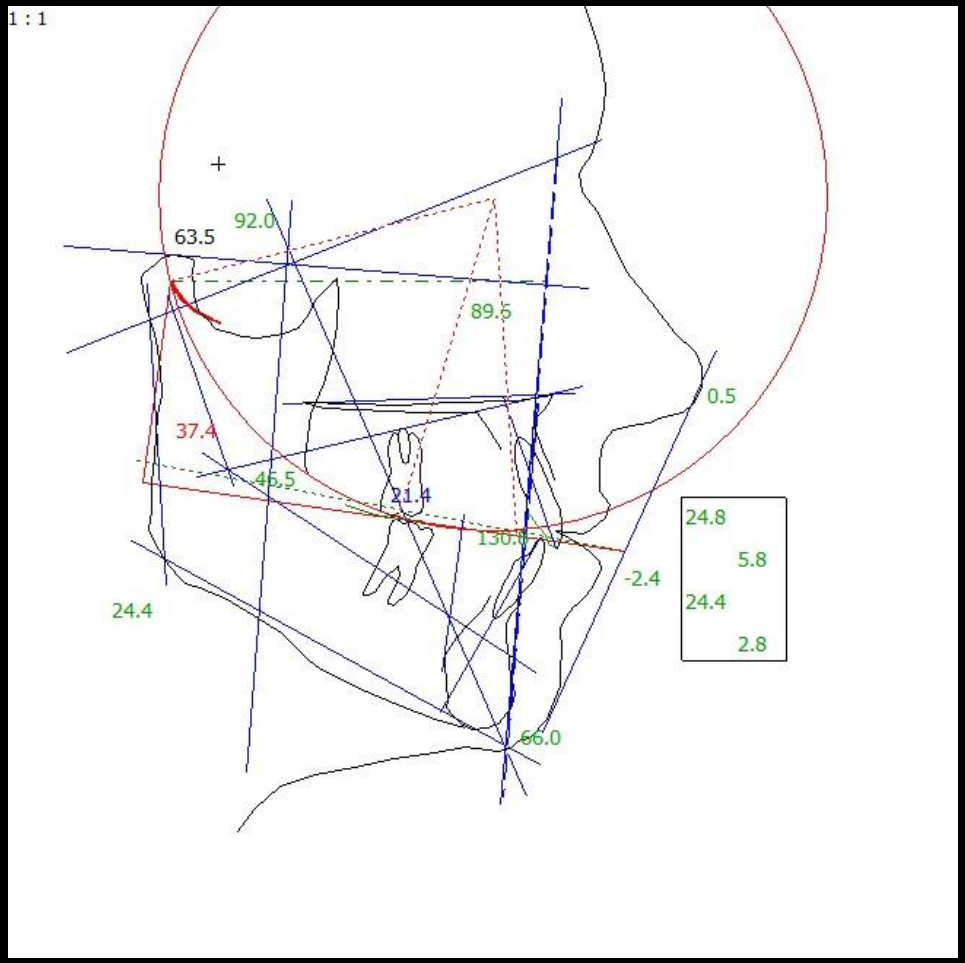
# CANINE GUIDANCE=47.8°

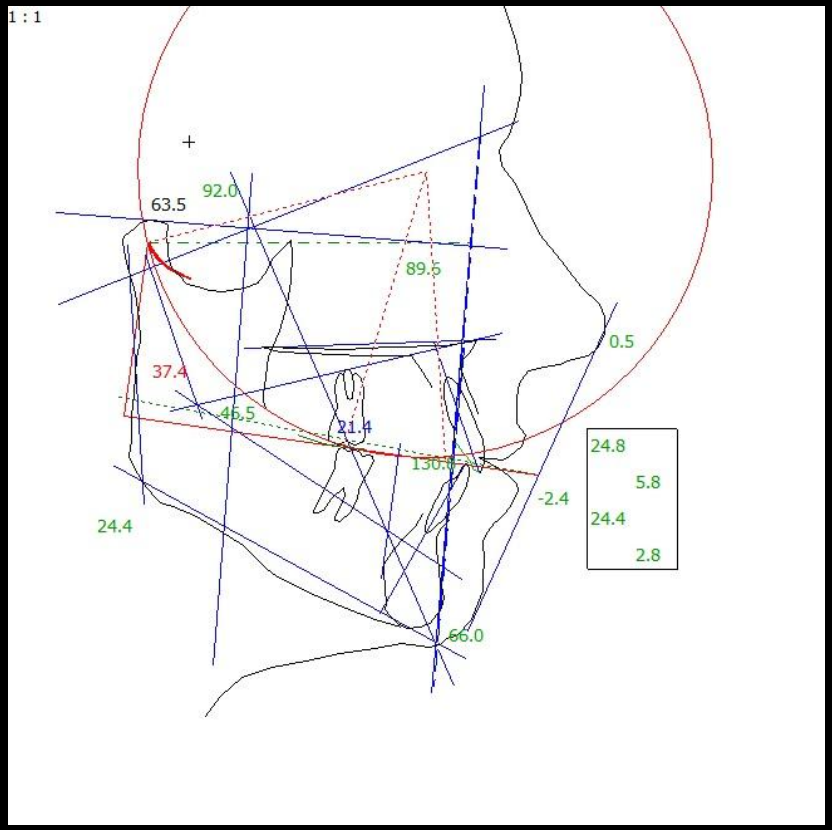


# Lateral cephalometric X- Ray



# Cadias tracing

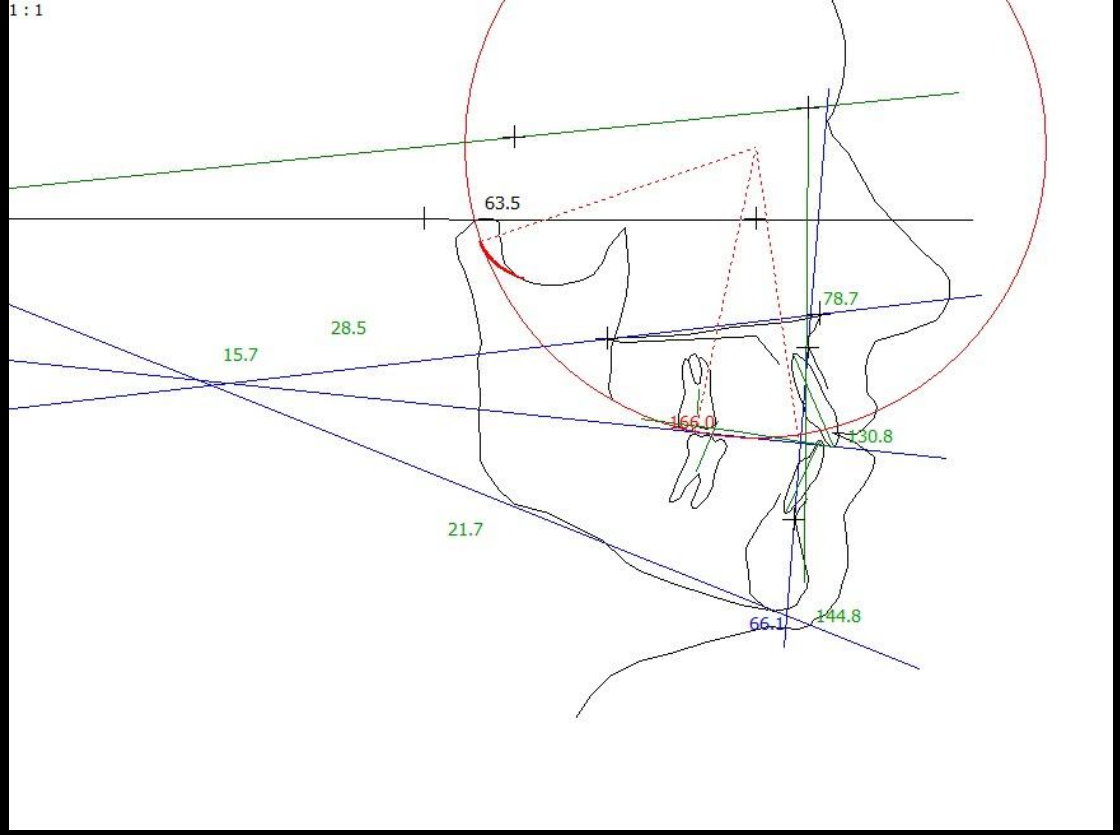





**SCI = 52.3**
**OP = 8.1**
**RCI =44.1  R =42.9  Left =45.4**
**AOD =44.1 -30 =14.1**
**AOD R =12.9 , L =15.4**
**S-AOP =54.1**
**RAG = 46.0**
**LFH =46.4**

# Slavicek Analysis

| Skeletal Measurement | Norm | Value | Trend |
|---|---|---|---|
| Facial Axis | 90.0 ° | 92.0 | |
| Facial Depth | 89.0 ° | 89.5 | |
| Mandibular Plane | 24.0 ° | 24.3 | |
| Facial Taper | 68.0 ° | 66.0 | |
| Mandibular Arc | 29.0 ° | 37.3 | 2B** |
| Maxillary Position | 65.0 ° | 66.8 | |
| Convexity | 0.0 mm | 0.5 | |
| Lower Facial Height (by R.Slavicek) | 43.2 ° | 46.4 | |
| Lower Facial Height to Point D | 50.3 ° | 54.3 | |
| **Dental Measurement** | **Norm** | **Value** | **Trend** |
| Interincisal Angle | 132.8 ° | 130.8 | |
| Upper Incisor Protrusion | 4.3 mm | 5.8 | |
| Upper Incisor Inclination | 23.1 ° | 24.8 | |
| Upper Incisor Vertical | mm | 1.1 | |
| Lower Incisor Protrusion | 1.2 mm | 2.7 | |
| Lower Incisor Inclination | 24.1 ° | 24.3 | |
| Upper Molar Position | 18.0 mm | 21.4 | 1+* |
| **Occlusal plane** | **Norm** | **Value** | **Trend** |
| Occlusal Plane - Axis Orbital Plane (Slavicek) | ----- ° | 8.1 | |
| Idealized Occlusal Plane - Axis Orbital Plane | ----- ° | 11.7 | |
| Distance: Occlusal plane - Axis (DPO) | 40.9 mm | 38.5 | |
| Radius of Curve of Spee | ----- mm | 63.4 | |
| Lip Embrasure | 0.0 mm | -0.2 | |
| Occlusal Plane Xi Distance | -1.4 mm | -4.6 | |
| **Functional Measurement** | **Norm** | **Value** | **Trend** |
| Sagittal Condylar Inclination (right) | ----- ° | 51.0 | |
| Sagittal Condylar Inclination (left) | ----- ° | 53.5 | |
| Sagittal Condylar Inclination | ----- ° | 52.3 | |
| Relative Condylar Inclination | ----- ° | 44.1 | |
| Relative Condylar Inclination 6 | ----- ° | 45.8 | |
| Relative Condylar Inclination 7 | ----- ° | 34.0 | |
| Relative Condylar Inclination 8 | ° | | |
| Anterior Guidance (S-AOP) | ----- ° | 54.1 | |
| Relative Anterior Guidance | ----- ° | 46.0 | |
| **Esthetic Measurement (Lip Relation)** | **Norm** | **Value** | **Trend** |
| Esthetic Plane | -2.3 mm | -2.4 | |




**ODI: 66.1 ( Open bite )**
**APDI:78.6 ( Class I, tend II )**
**FH-MP:21.7 ( Low angle )**
**LFH:46.4 ( Slightly increased)**

## Sato Analysis

| Denture frame analysis | Norm | Value | Trend |
|---|---|---|---|
| FH - MP | 25.9 ° | 21.7 | |
| PP - MP | 24.6 ° | 28.4 | |
| OP - MP | 13.2 ° | 15.7 | |
| OP - MP / PP - MP | 54.0 % | 55.1 | |
| AB - MP | 71.3 ° | 72.8 | |
| A'-P' | 50.0 mm | 43.9 | 1+* |
| A'-6' | 23.0 mm | 21.5 | |
| A'-6' / A'-P' | 50.0 % | 49.0 | |
| U1 - AB (degree) | 31.7 ° | 28.4 | |
| U1 - AB (mm) | 9.5 mm | 7.1 | 1–* |
| L1 - AB (degree) | 25.4 ° | 20.7 | 1–* |
| L1 - AB (mm) | 6.2 mm | 4.0 | 1–* |
| Inter molar angle | 174.0 ° | 165.9 | 2+** |
| FH - PP | 1.3 ° | –6.7 | 8–***> |
| Upper occlusal plane | Norm | Value | Trend |
| Mx - OP(A) | 80.2 ° | 74.3 | 1–* |
| Mx - OP(P) | 76.6 ° | 75.2 | |
| FH - OP(A) | 7.7 ° | 8.8 | |
| FH - OP(P) | 11.3 ° | 8.0 | 1–* |
| Kim analysis | Norm | Value | Trend |
| ODI | 72.0 ° | 66.1 | 1+* |
| APDI | 81.0 ° | 78.6 | |
| Combination factor | 153.0 ° | 144.7 | |
| Downs-Graber analysis | Norm | Value | Trend |
| Facial angle | 84.9 ° | 89.5 | 1D* |
| Convexity | –7.6 ° | –1.1 | 1+* |
| AB - Facial plane angle | –4.8 ° | –4.1 | |
| FH - MP | 25.9 ° | 21.7 | |
| Y Axis | 65.4 ° | 58.5 | 1+* |
| FH - OP | 11.4 ° | 6.0 | 1+* |
| Interincisal angle | 124.1 ° | 130.8 | |
| L1 - OP | 66.2 ° | 68.0 | |
| L1 - MP | 96.3 ° | 93.6 | |
| U1 - A.POG | 8.9 mm | 5.8 | 1–* |
| FH - SN | 6.2 ° | 5.7 | |
| SNA Angle | 83.3 ° | 84.4 | |
| SNB Angle | 78.9 ° | 82.4 | 1D* |
| ANB Angle | 3.4 ° | 1.9 | |
| U1 - Facial Plane (mm) | 11.7 mm | 6.1 | 2–** |
| U1 - FH (degree) | 111.1 ° | 113.8 | |
| U1 - SN (degree) | 104.5 ° | 108.0 | |
| Gonial angle | 122.2 ° | 116.3 | 1–* |
| Ramus Inclination | 2.9 ° | 4.5 | |

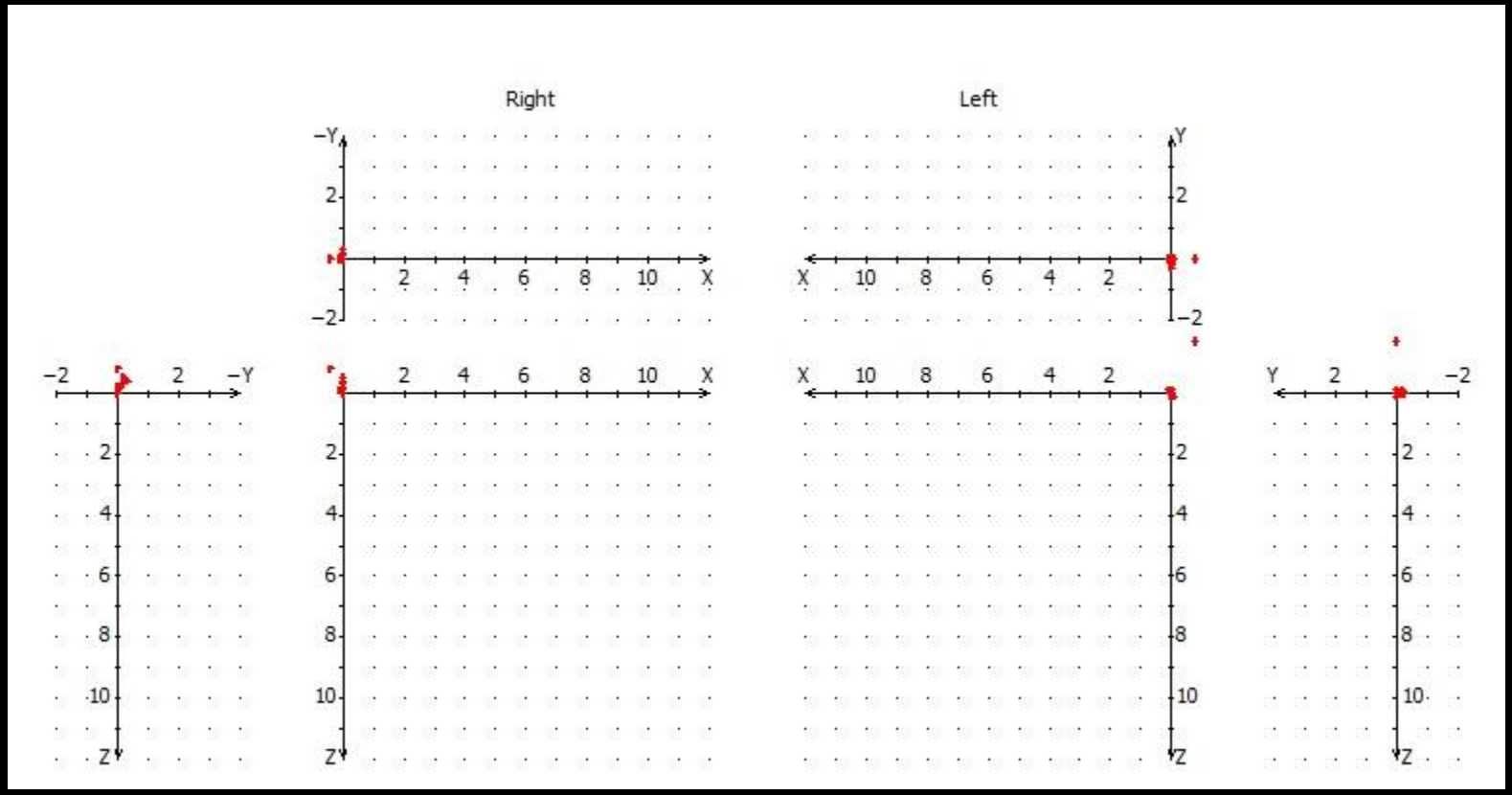
# Slavicek Interactive Verbal Analysis

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

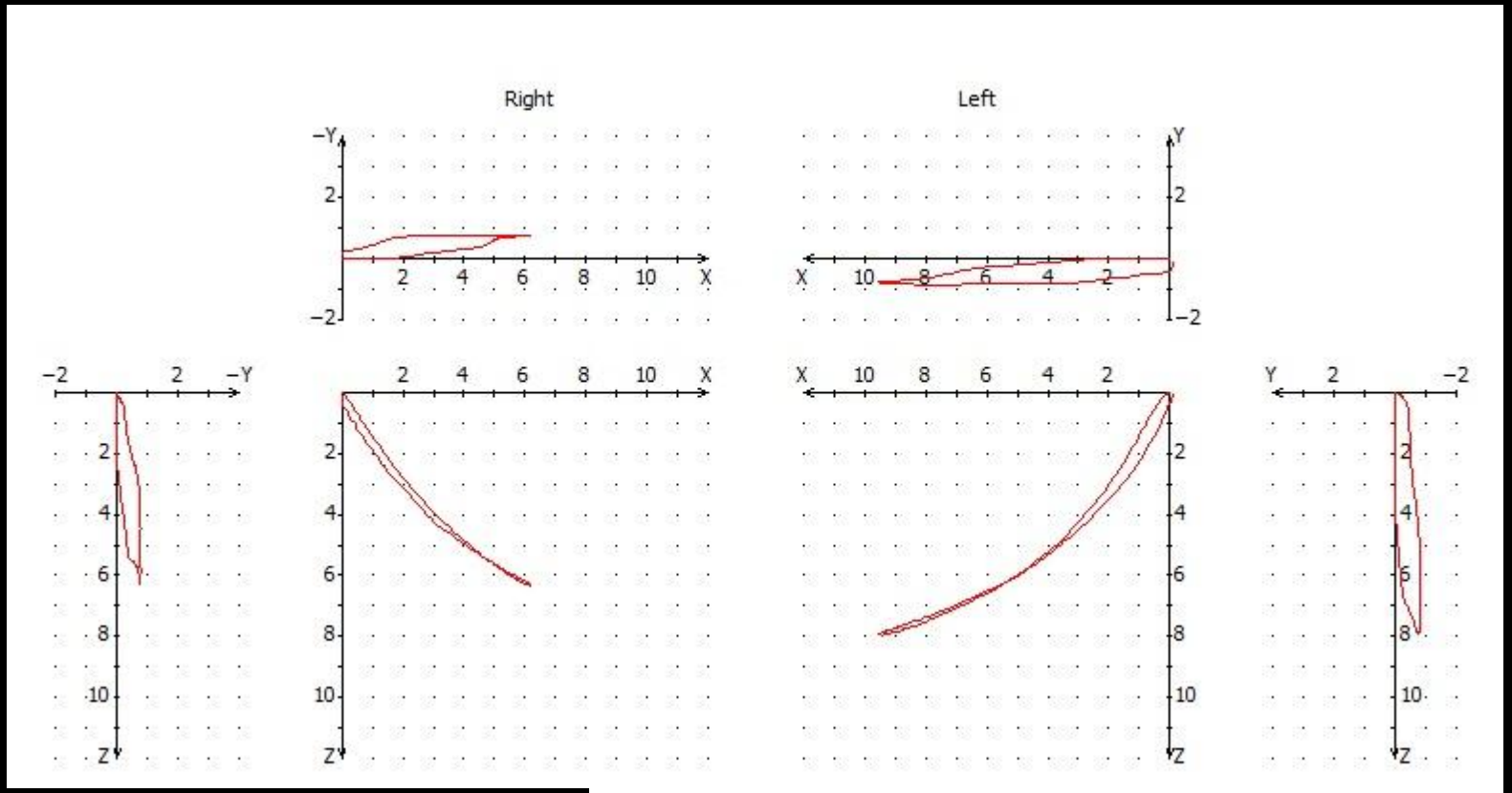
## Explanation

| Determinants | Norm | Value | Trend |
|---|---|---|---|
| Facial Axis | 90.0 ° | 92.0 | |
| Facial Depth | 89.0 ° | 89.5 | |
| Facial Taper | 68.0 ° | 66.0 | |
| Mandibular Plane | 24.0 ° | 24.3 | |
| Related Values | Norm | Value | Trend |
| Bjoerk Sum | 396.0 ° | 387.4 | 3−*** |
| Facial Length Ratio | 63.5 % | 69.5 | 3+*** |
| Y Axis to S N | 67.0 ° | 64.8 | |
| Y Axis (Downs) | 61.2 ° | 59.0 | |
| S N to Gonion Gnathion Angle | 32.6 ° | 27.4 | 1−* |

# CPM

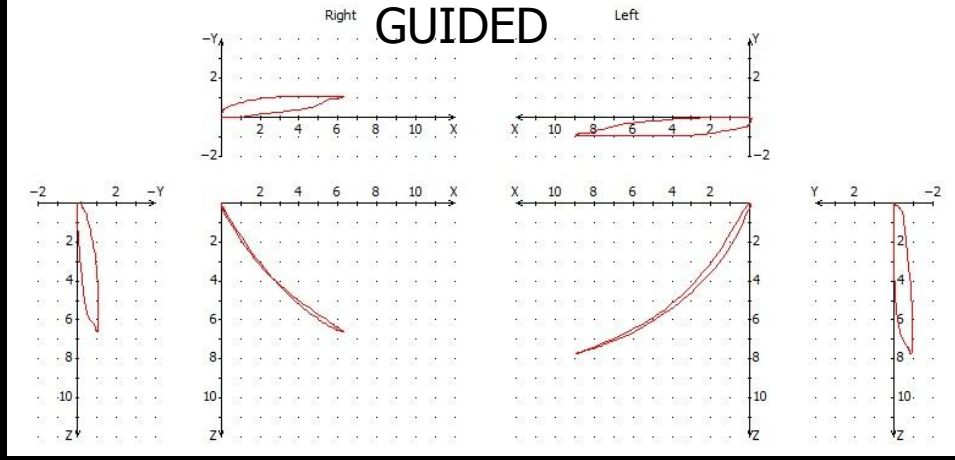


# Pro/Re

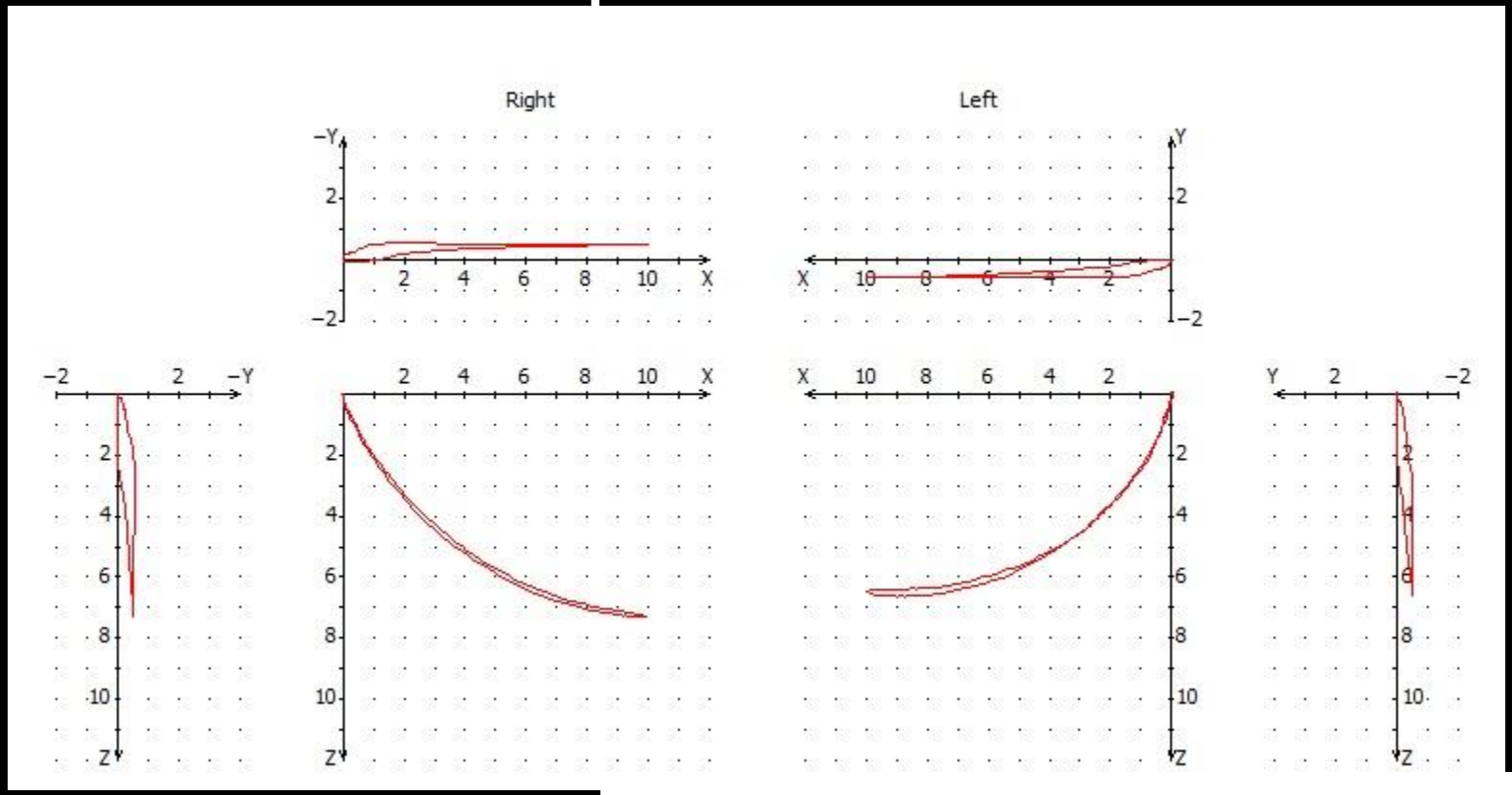



| Protrusion # 2<br>8-12 mm average | Right | Left |
|---|---|---|
| Quanity | 8.91mm | 12.48mm |
| Quality | Average | Average |
| Characteristic | Concave | Concave |
| Symmetry | Asymmetric | |

GUIDED

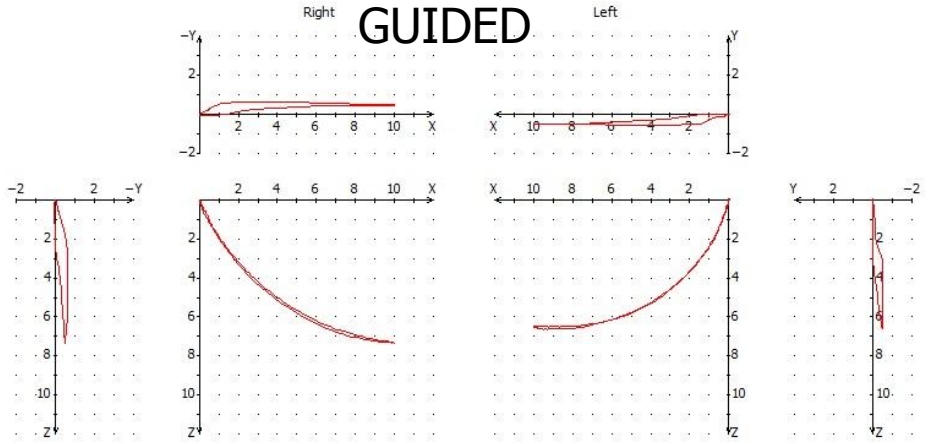


# Open/Close

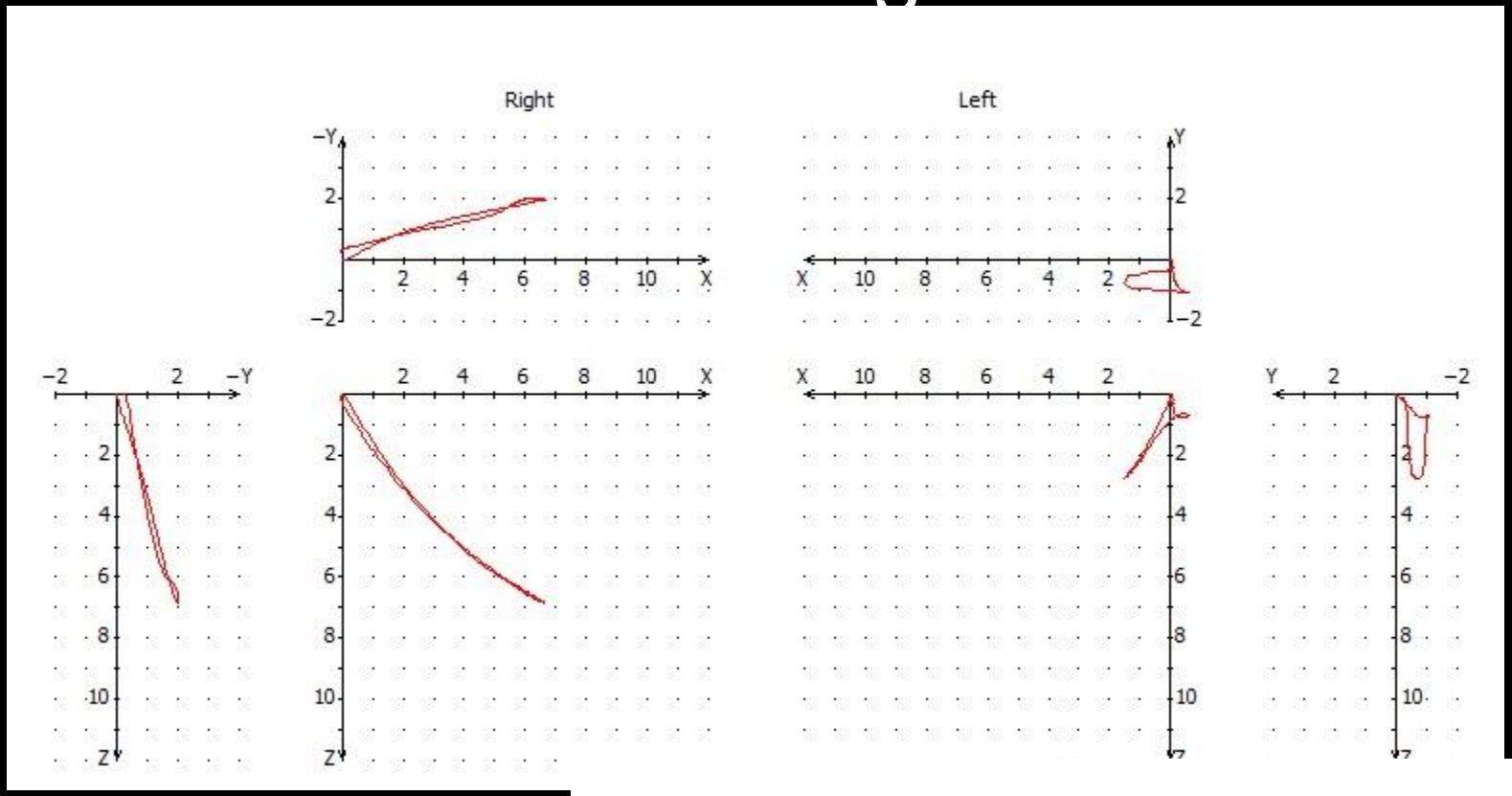



| Open Close # 10-16mm average | Right | Left |
|---|---|---|
| Quantity | 12.39 mm | 11.95mm |
| Quality | Average | Average |
| Characteristic | Concave | Concave |
| Symmetry | Assymetric | |

GUIDED

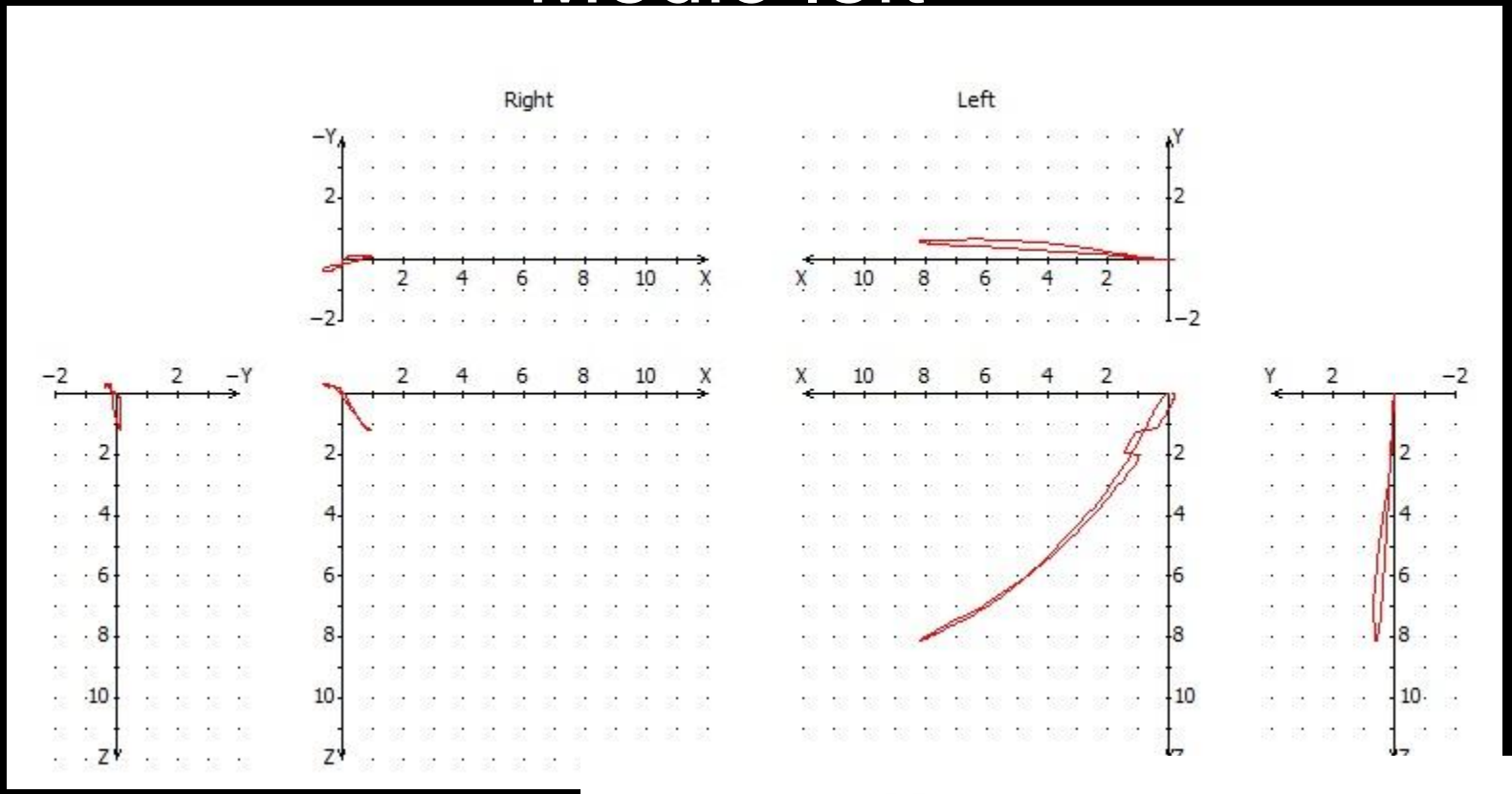


# Medio right

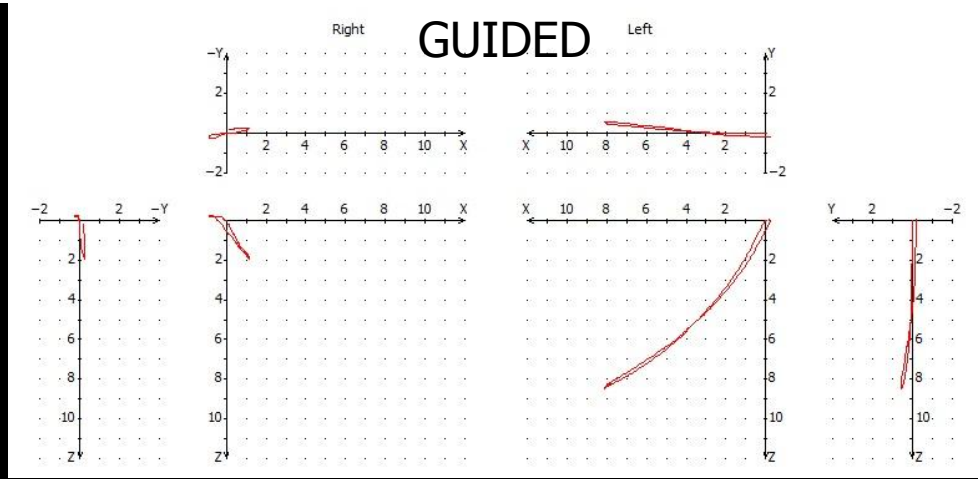



| Medio right | 9-14 mm average |
|---|---|
| Quantity | 9.75mm |
| Quality | Average |
| Characteristic | Concave |
| Symmetry | |

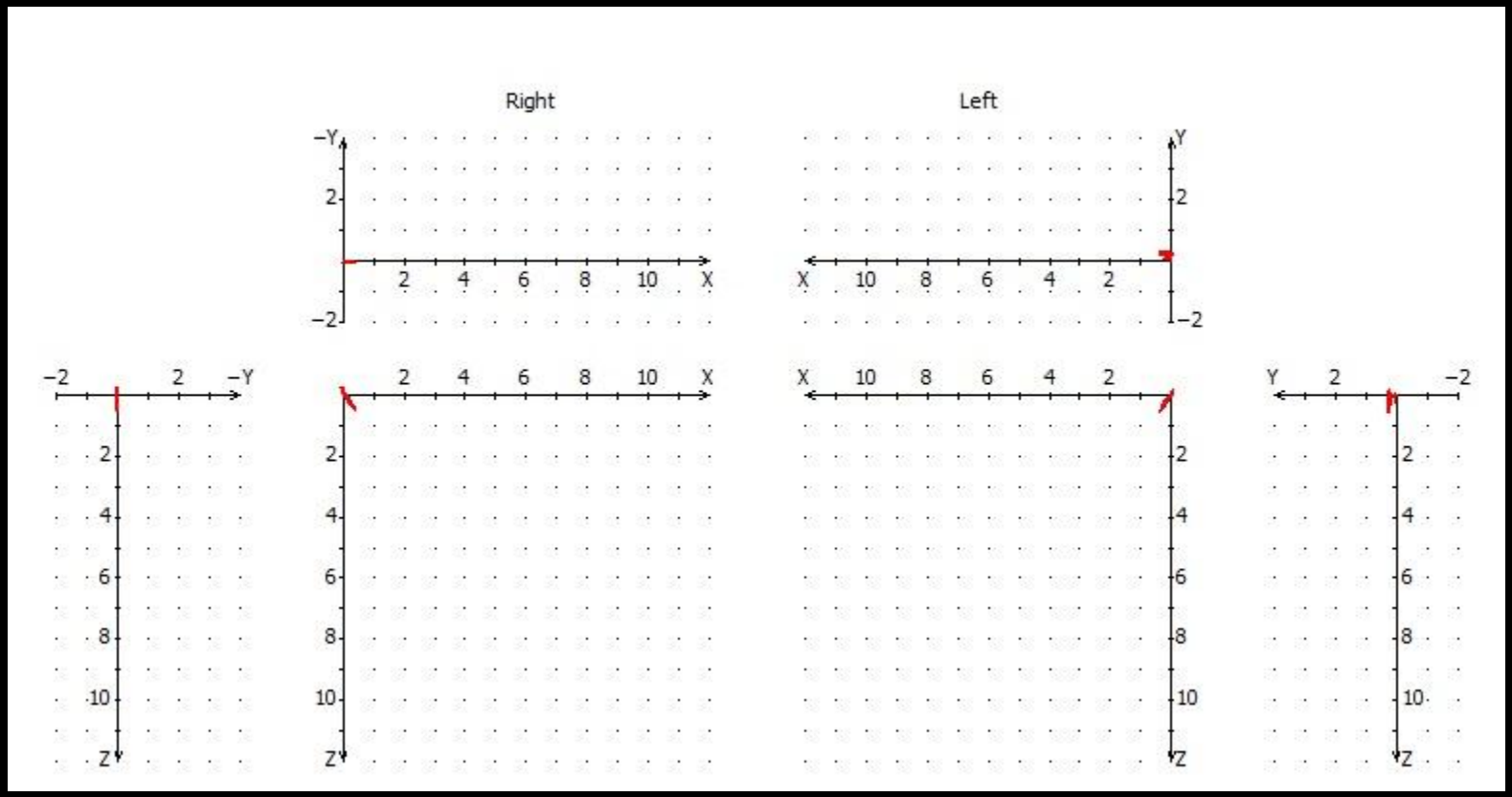
# Medio left



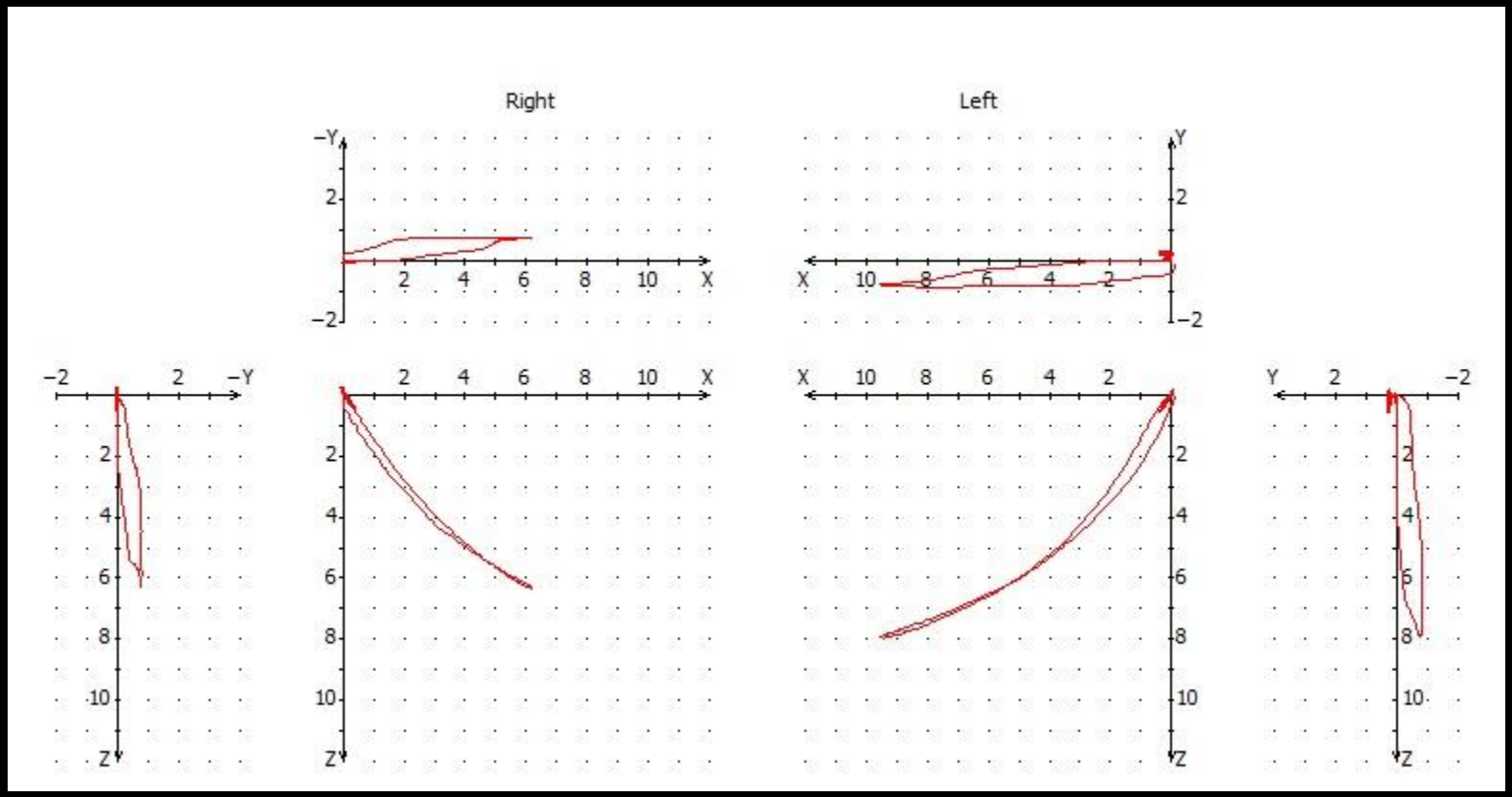

| Medio left | 9-14mm average |
|---|---|
| Quantity | 11.56mm |
| Quality | Poor |
| Characteristic | Concave |
| Symmetry | |



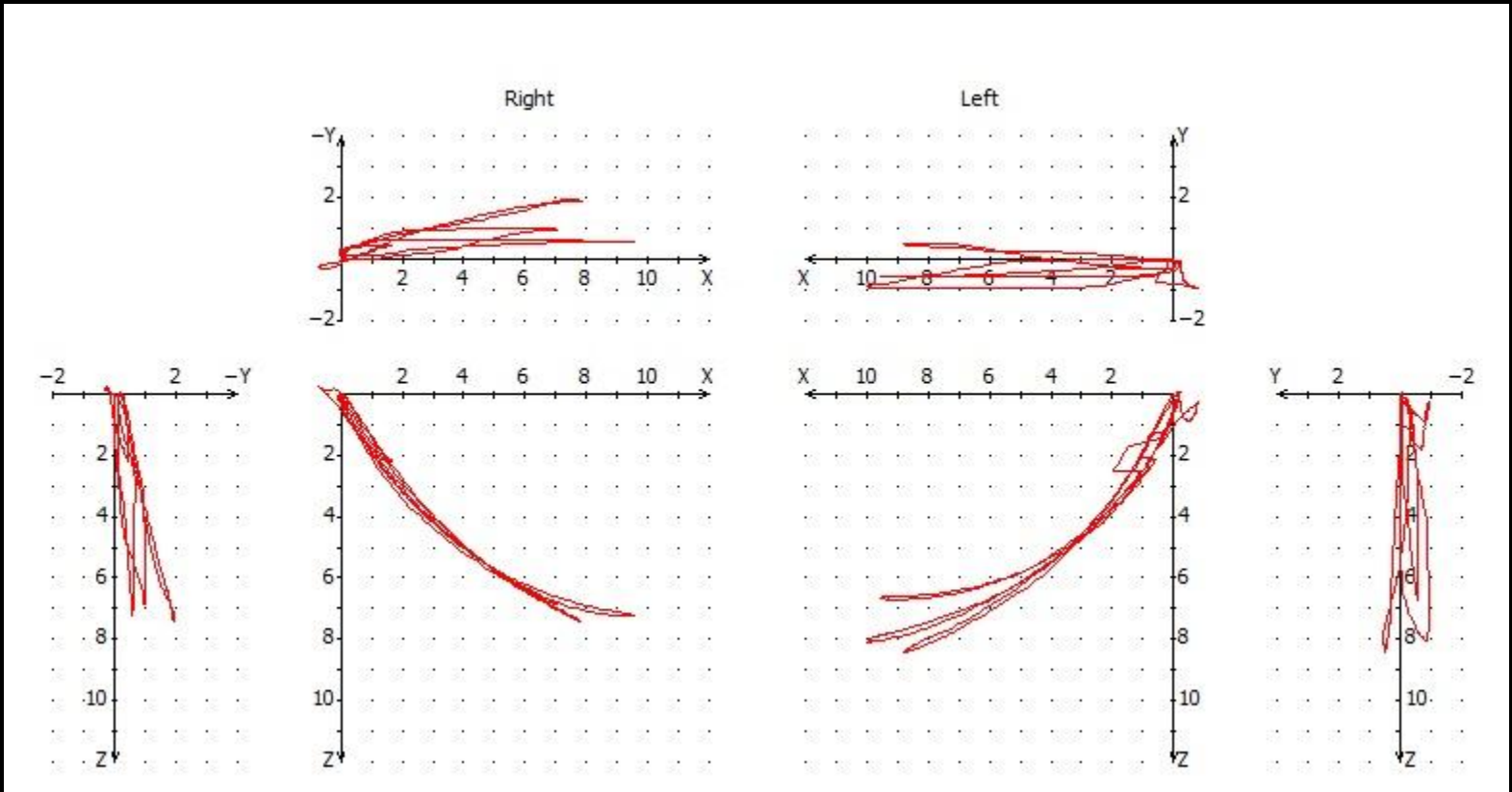
# Bruxism



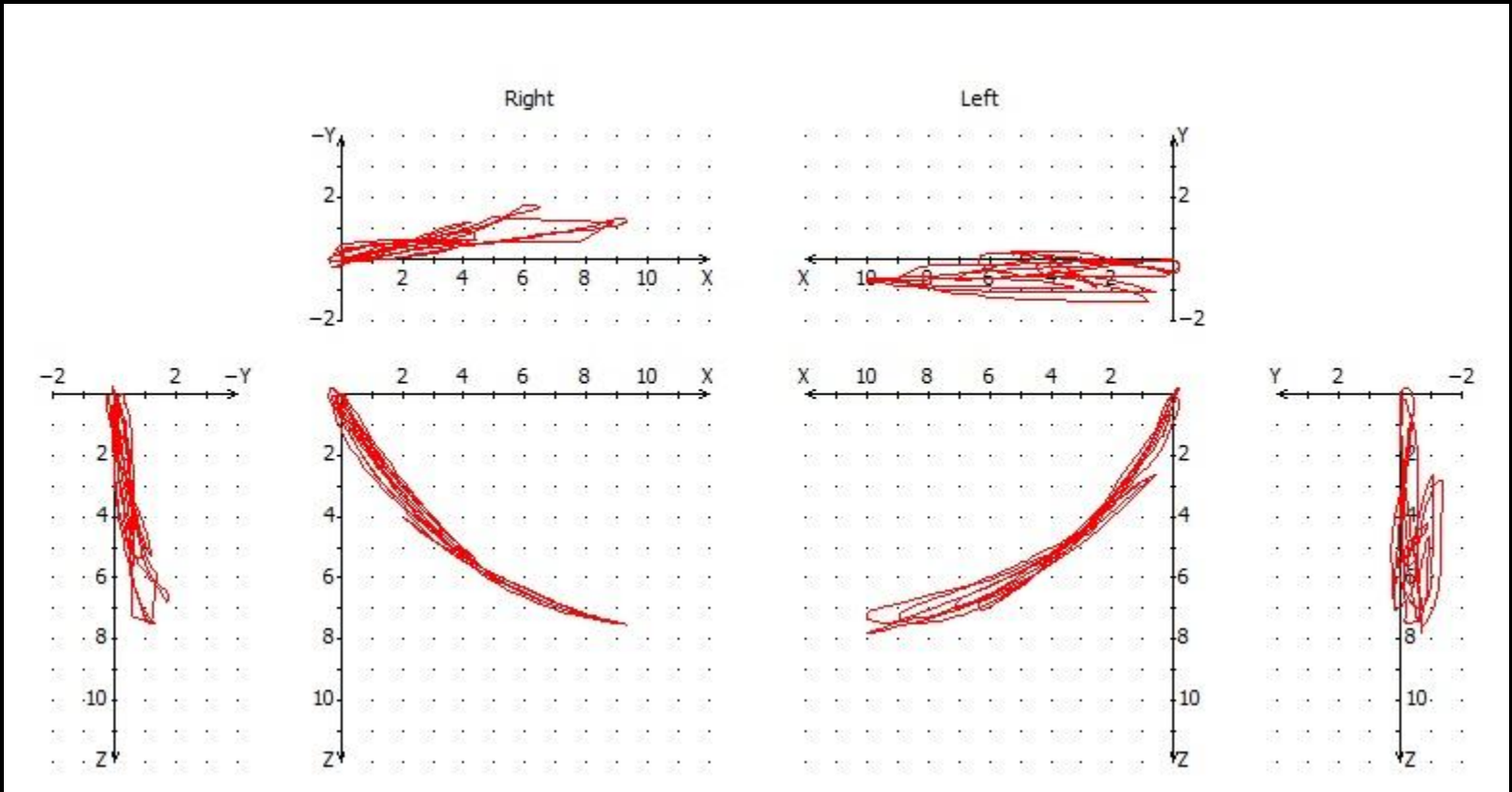
# Overlay Pro/Brux



# Retral Stability

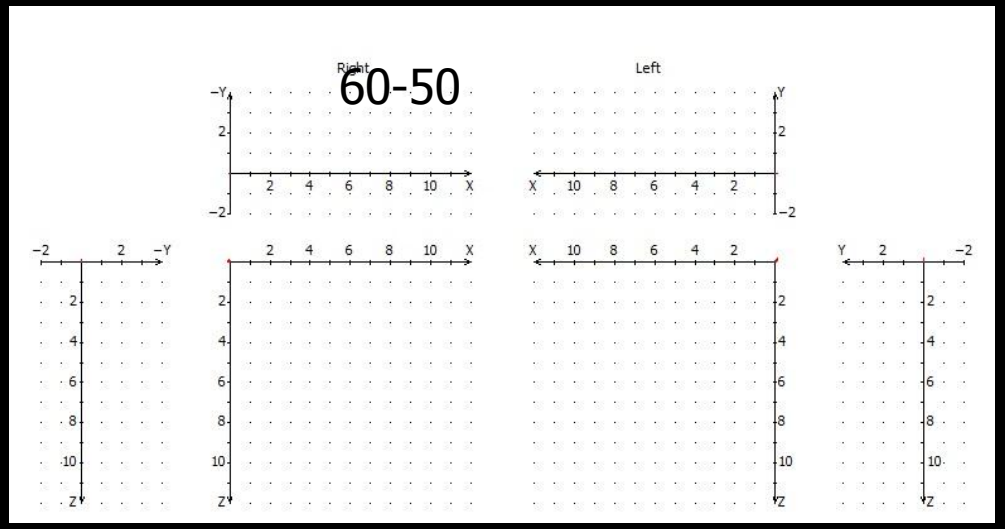


# Free movements

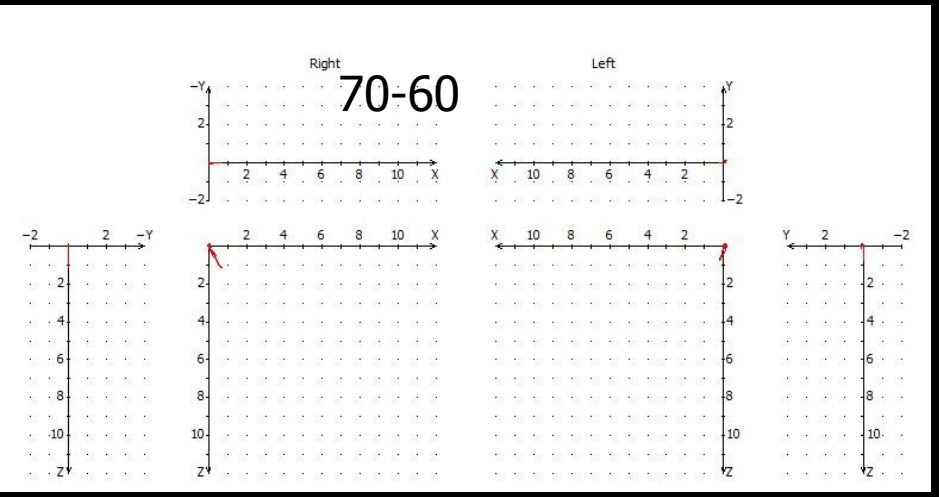


# Phonetics

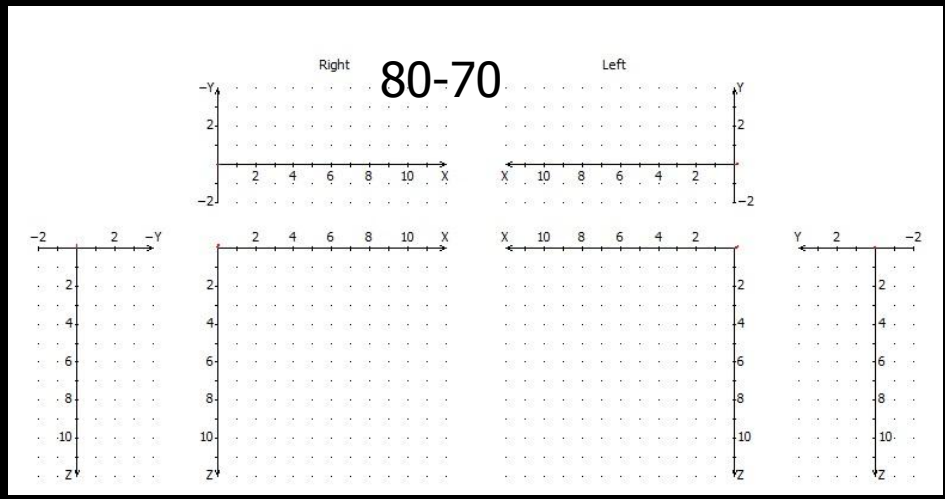
60-50



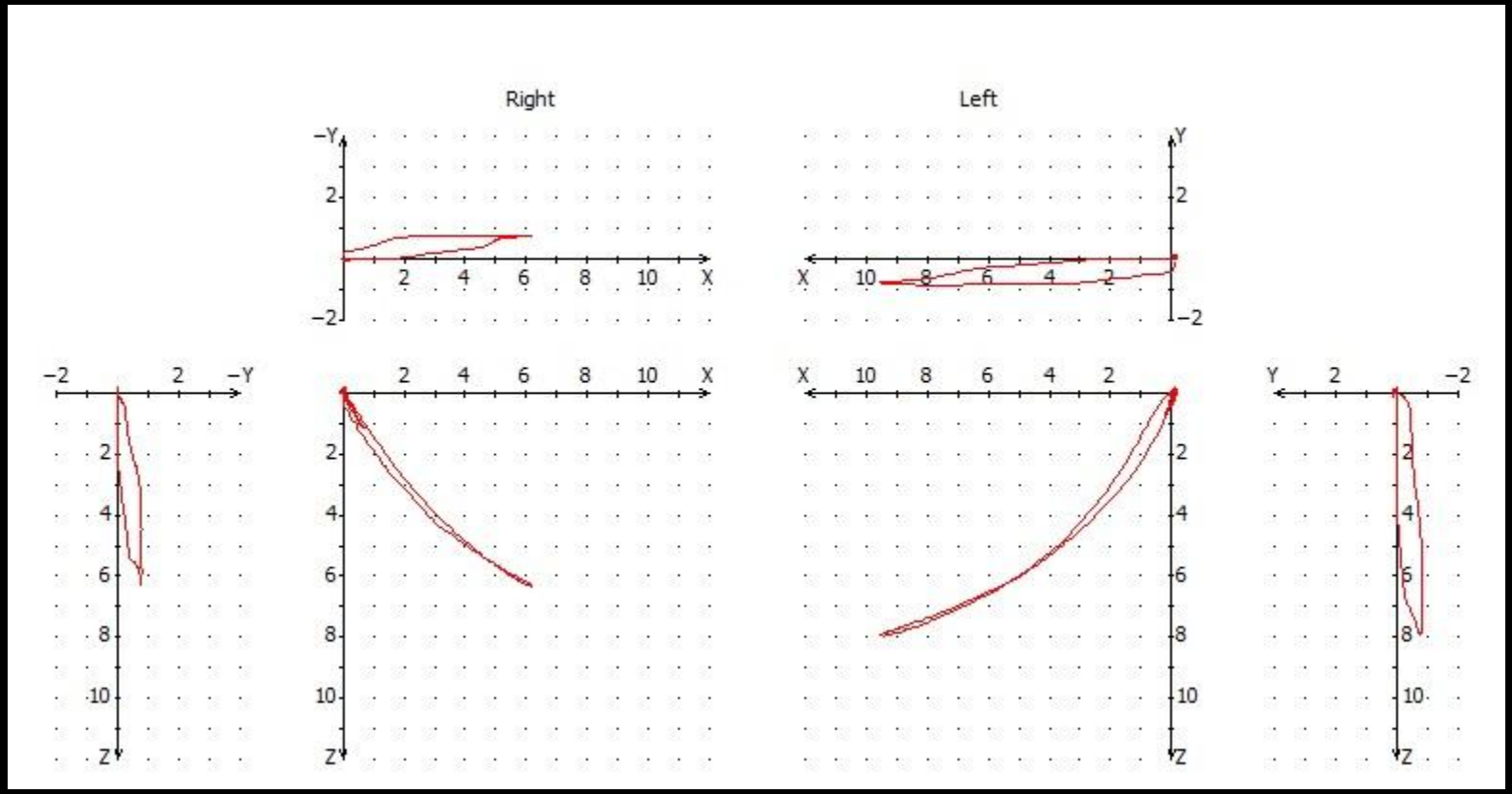

70-60



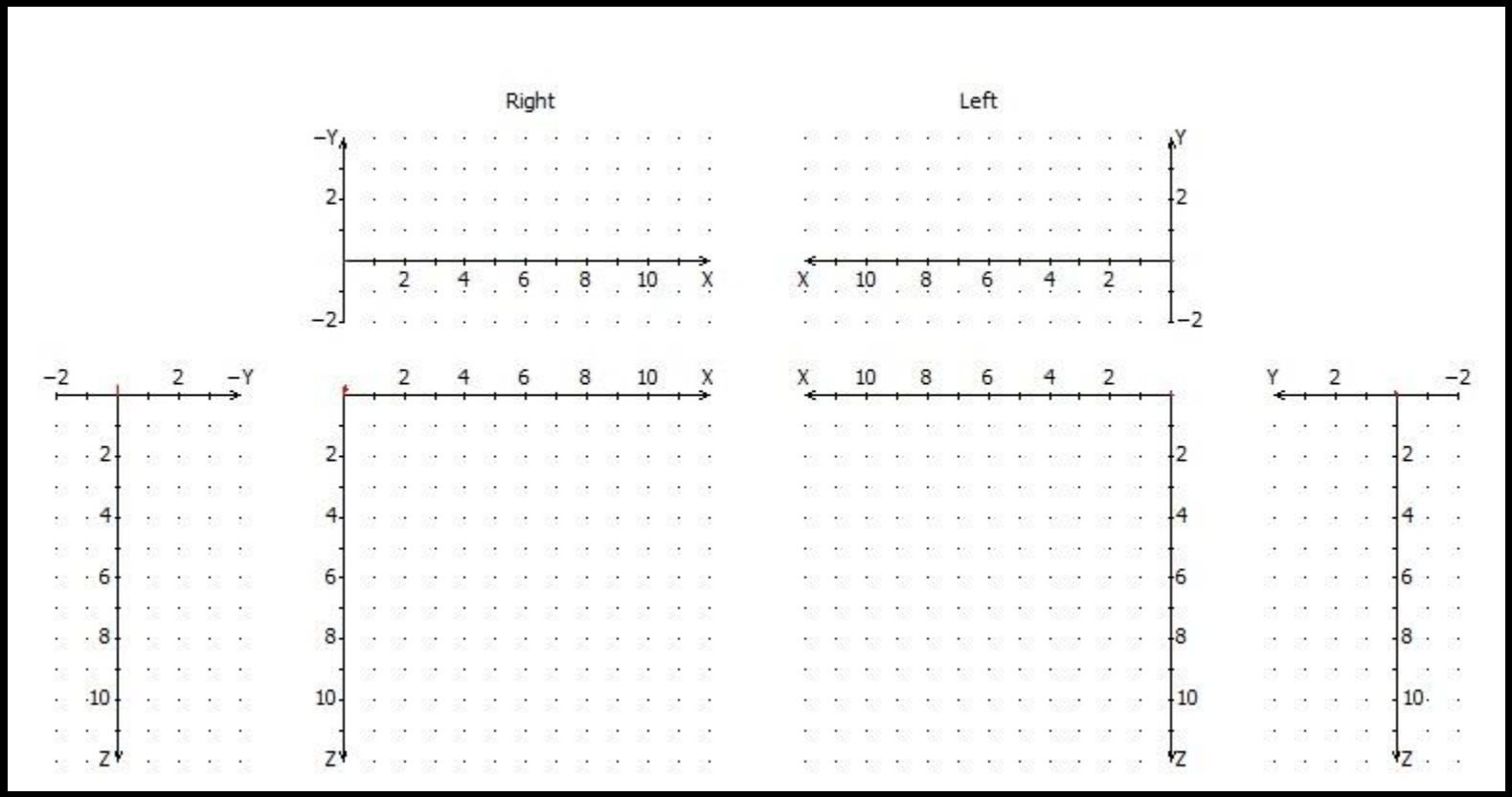

80-70



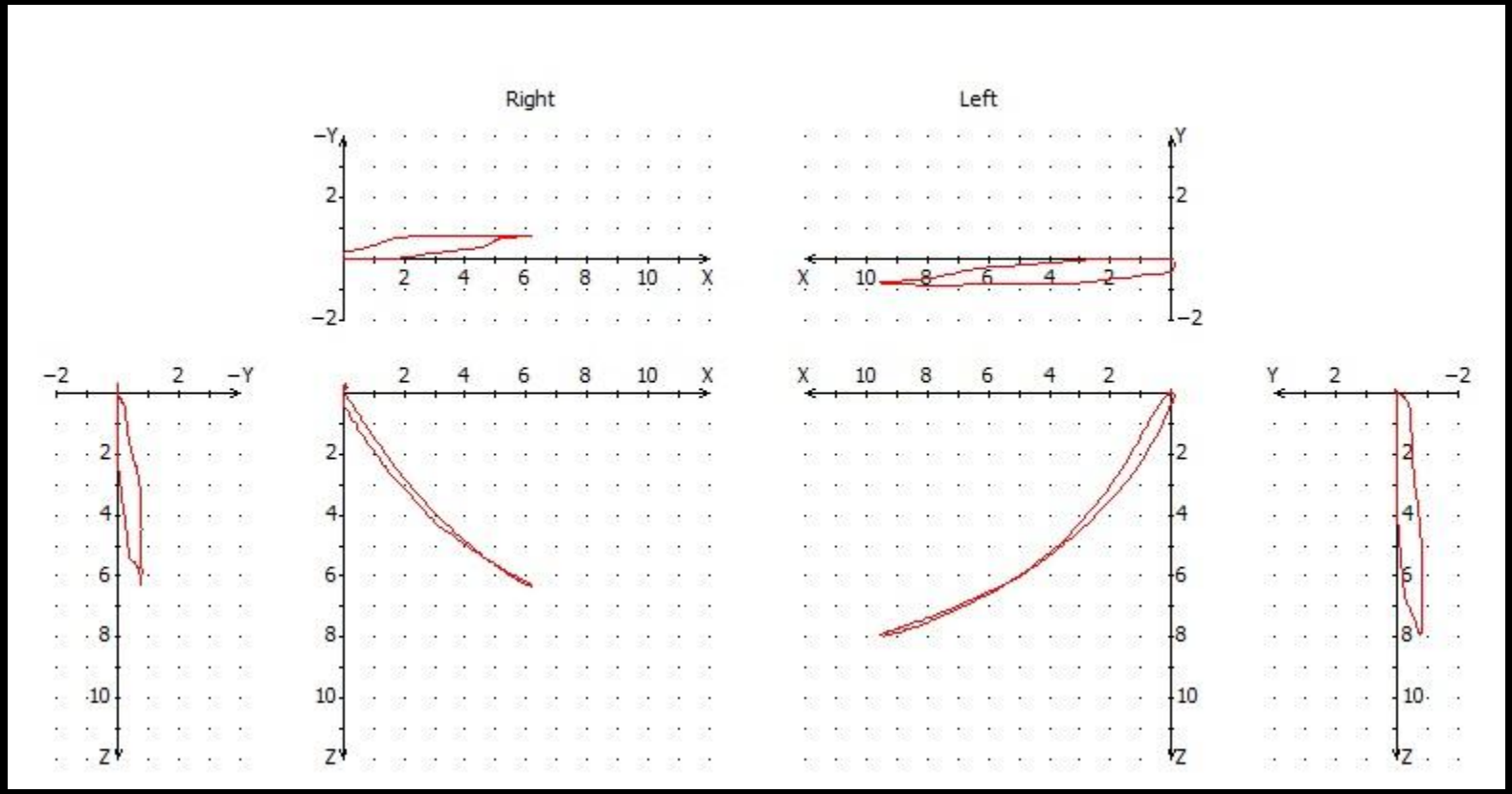
# Overlay Pro/ Phonetics



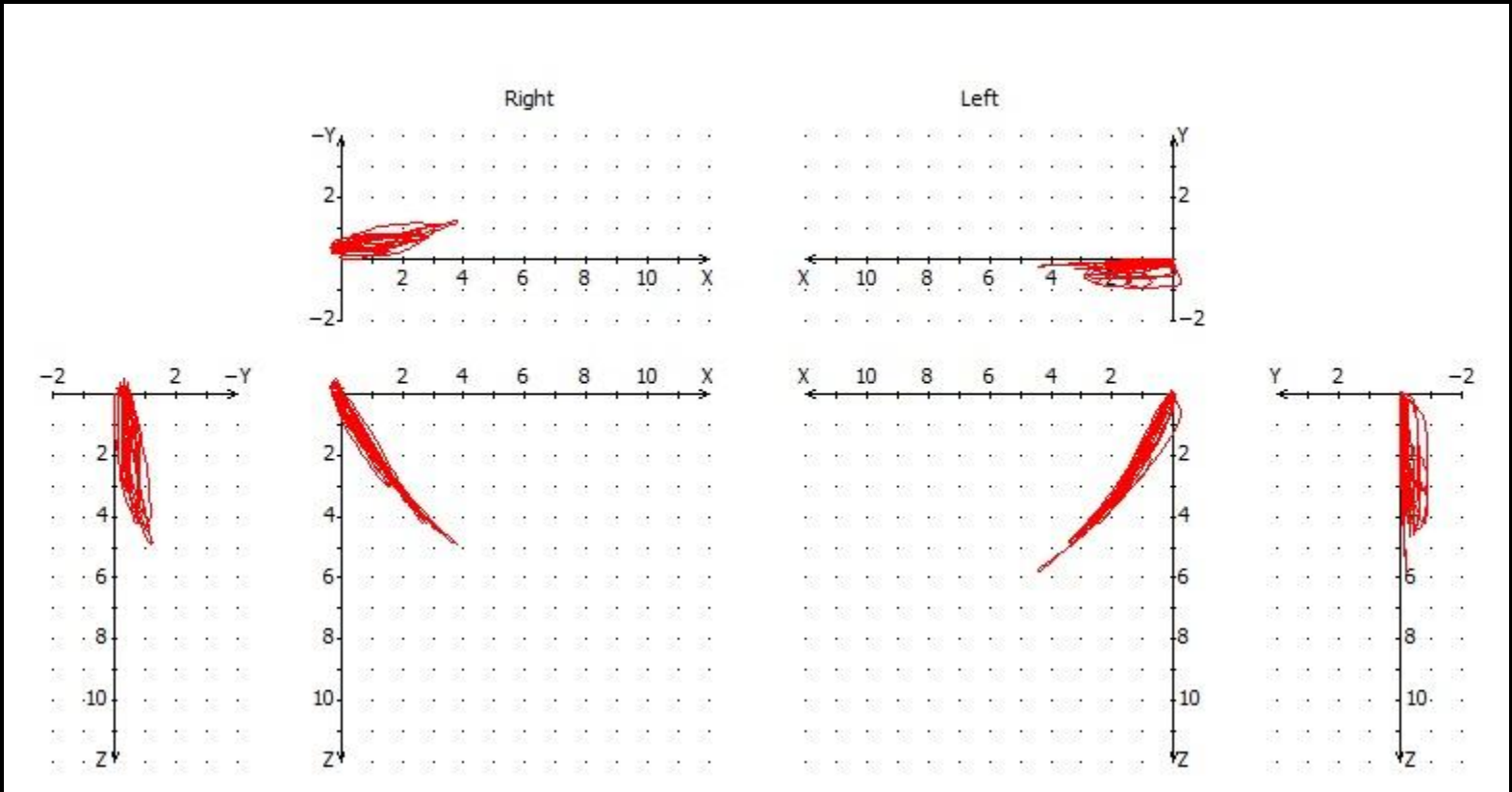
# Deglutition



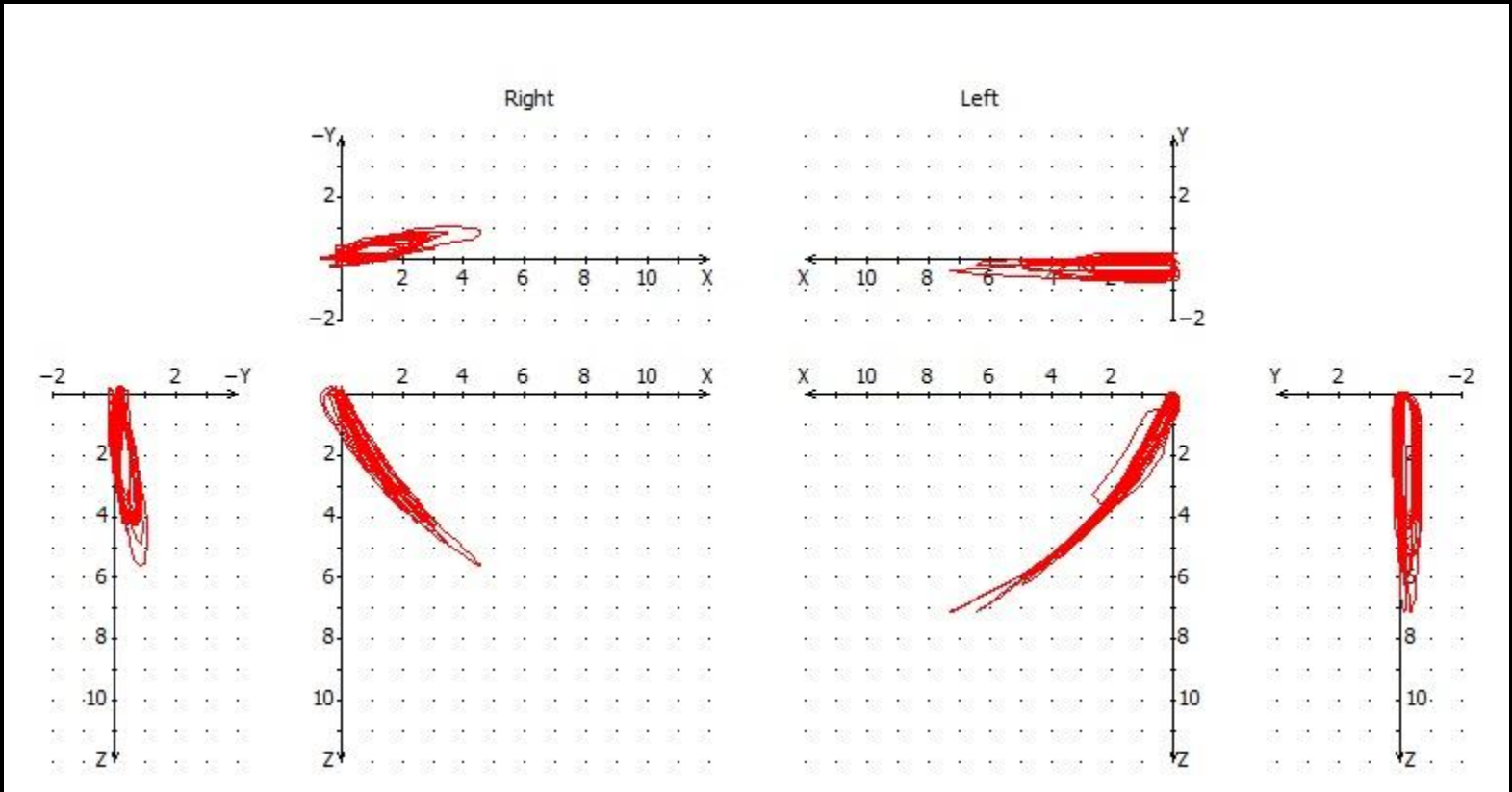
# Overlay Pro/Deglutition



# Mastication right



# Mastication left



# Articulator settings

**CADIAX® Curves**

| | Protrusion | | Mediotrusion right | | Mediotrusion left | |
|---|---|---|---|---|---|---|
| | SCI right | SCI left | S C I | T C I | S C I | T C I |
| 1st | 63,3° | 61,5° | | | | |
| 2nd | 61,0° | 63,7° | | | | |
| 3rd | 59,4° | 61,1° | | | | |
| 4th | 56,7° | 59,0° | | | | |
| 5th | 54,8° | 56,7° | | | | |
| 6th | 52,9° | 54,4° | | | | |
| 8th | 48,5° | 49,4° | | | | |
| 10th | 43,9° | 44,4° | | | | |
| 14th | | | | | | |

| | Retrusion | |
|---|---|---|
| -1. | | |
| -2. | | |

**Sagittal Condylar Guidance SAM®**

| Fossa | Right | | | Left | | |
|---|---|---|---|---|---|---|
| | 3rd mm | 5th mm | 10th mm | 3rd mm | 5th mm | 10th mm |
| Fossa 1 | 56° | 53° | 48° | 58° | 55° | 49° |
| Fossa 2 | **•49°** | **•49°** | **•46°** | **•52°** | **•51°** | **•48°** |
| Fossa 3 | 36° | 37° | 42° | 38° | 39° | 43° |

**Transversal Condylar Guidance SAM®**

| | Right | | | Left | | |
|---|---|---|---|---|---|---|
| | 3rd mm | 5th mm | 10th mm | 3rd mm | 5th mm | 10th mm |
| WHITE | | | | | | |
| GREEN | | | | | | |
| BLUE | | | | | | |
| RED | | | | | | |

# Incisal pin table

## Incisal Pin Table

| Incisal Pin Height | 0.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 | 20.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lower Facial Height | 46.5 | 46.9 | 47.3 | 47.7 | 48.1 | 48.5 | 48.9 | 49.6 | 50.3 | 51.0 | 51.6 | 52.3 | 53.5 |
| LFH. (Norm) | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 |
| LFH. (Variation) | 0.0 | 0.4 | 0.8 | 1.2 | 1.6 | 2.0 | 2.4 | 3.1 | 3.8 | 4.5 | 5.2 | 5.8 | 7.0 |
| Menton Vertical | 0.0 | 0.4 | 0.8 | 1.3 | 1.7 | 2.1 | 2.4 | 3.2 | 3.9 | 4.6 | 5.2 | 5.8 | 7.0 |
| Pogonion Sagittal | 0.0 | −0.8 | −1.6 | −2.3 | −3.1 | −3.9 | −4.7 | −6.3 | −7.9 | −9.6 | −11.2 | −12.8 | −16.1 |
| Incision Inf. Vertical | 0.0 | 0.5 | 1.1 | 1.6 | 2.1 | 2.6 | 3.1 | 4.0 | 4.9 | 5.8 | 6.7 | 7.5 | 9.1 |
| Incision Inf. Sagittal | 0.0 | −0.5 | −1.1 | −1.7 | −2.2 | −2.8 | −3.4 | −4.5 | −5.7 | −7.0 | −8.2 | −9.4 | −12.0 |

| Incisal Pin Height | 0.0 | −1.0 | −2.0 | −3.0 | −4.0 | −5.0 | −6.0 | −8.0 | −10.0 | −12.0 | −14.0 | −16.0 | −20.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lower Facial Height | 46.5 | 46.1 | 45.6 | 45.2 | 44.7 | 44.3 | 43.8 | 42.8 | 41.8 | 40.7 | 39.6 | 38.4 | 35.8 |
| LFH. (Norm) | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 |
| LFH. (Variation) | 0.0 | −0.4 | −0.9 | −1.3 | −1.8 | −2.2 | −2.7 | −3.7 | −4.7 | −5.8 | −6.9 | −8.1 | −10.7 |
| Menton Vertical | 0.0 | −0.4 | −0.9 | −1.4 | −1.8 | −2.3 | −2.8 | −3.8 | −4.9 | −6.0 | −7.2 | −8.5 | −11.1 |
| Pogonion Sagittal | 0.0 | 0.8 | 1.5 | 2.3 | 3.1 | 3.8 | 4.6 | 6.0 | 7.5 | 8.9 | 10.3 | 11.6 | 14.1 |
| Incision Inf. Vertical | 0.0 | −0.5 | −1.1 | −1.6 | −2.2 | −2.8 | −3.4 | −4.6 | −5.8 | −7.1 | −8.5 | −9.9 | −12.9 |
| Incision Inf. Sagittal | 0.0 | 0.5 | 1.1 | 1.6 | 2.1 | 2.6 | 3.1 | 4.1 | 5.0 | 5.8 | 6.7 | 7.4 | 8.7 |

## Extraoral findings:

1. Neck tilts to the left.
2. Straight profile.

## Intraoral Findings:

1. Upper midline is 3mm to the right.
2. 14 is missing ( extracted ).
3. Left side: Class I molar, Class III canine relationship, Right side : Class I molar and canine relationship.
4. Enamel wear on U/L anterior teeth and at the buccal surface of the lower premolars and molars.
5. Crowding in the LA.

## Model Findings:

1. In RP: Same as intraoral.
2. No intercoronal space.
3. Upper midline 3mm to the right.
4. Poor posterior occlusal support.
5. Flat curve of Spee.
6. Negative Wilson curve.

## Bruxchecker Findings:

1. Strong anterior interference between 12-43.
2. A contact interference on premolars and molars ( negative Wilson curve )
3. Tip- tip bruxism pattern on canines ( Steep canines )

## Radiographic findings:

1. Mesially inclined psterior teeth.
2. 48 is present .
3. Rc Tx on 16, 22.

## Condylographic Findings:

1. CPM: RCP-ICP, RP-Forced bite : Compression in the right joint, RP- Resiliency : Reduced in the left joint
2. ΔY to the left.
3. Increased Bennett angle in the right joint ( Loose joint )
4. No resurtrusive movement in both joints during mediotrusive movements ( after correction of the intercondylar distance 95mm ) and mastication ( posteriorly displaced condyles ).
5. Poor retral stability.
6. Compression in the right joint during bruxism and deglutition.

## Cephalometric findings:

1. SCI 52.3 ( R:51.0 , L: 53.5 0
2. OP 8.1
3. Average AOD 14.1 ( R:12.9, L:15.4 )
4. Average anterior guidance S-AOP 54.1
5. Slightly increased LFH 46.4 ( 43.2 ), reduced mandibular plane FH-MP 21.7
6. ODI 66.1 ( Open bite ), APDI 78.6 ( Class I , tendency Class II )

## Subjective Problem List:

1. Pain in the left joint

## Objective Problem List:

1. 14 is missing , upper midline is shifted 3mm to the right.
2. Right side : Class I molar, Class III canine relationship, Left side : Class I molar and canine relationship.
3. No intercoronal space, poor posterior occlusal support, negative Wilson curve
4. ΔY to the right.
5. Compresion in the right joint.
6. Increased  Bennett angle in the right joint( loose joint ).
7. Lack of resurtrusive movement of both condyles during mediotrusive movements and mastication ( posteriorly displaced condyles )
8. Poor retral stability.

# Treatment objectives

- RP is DRP. Define TRP.
- Unload both joints.
- Bring anteriorly both condyles.
- Correct upper midline.
- Open space for an implant to restore missing 14.
- Make POP steeper ( Reduce AOD) to allow posterior adaptation of the mandible( In TRP mandible comes forward in a Class III relationship)
- Provide Class I sequential occlusion with good posterior occlusal support, proper intercoronal space, proper anterior guidance.

# TRP

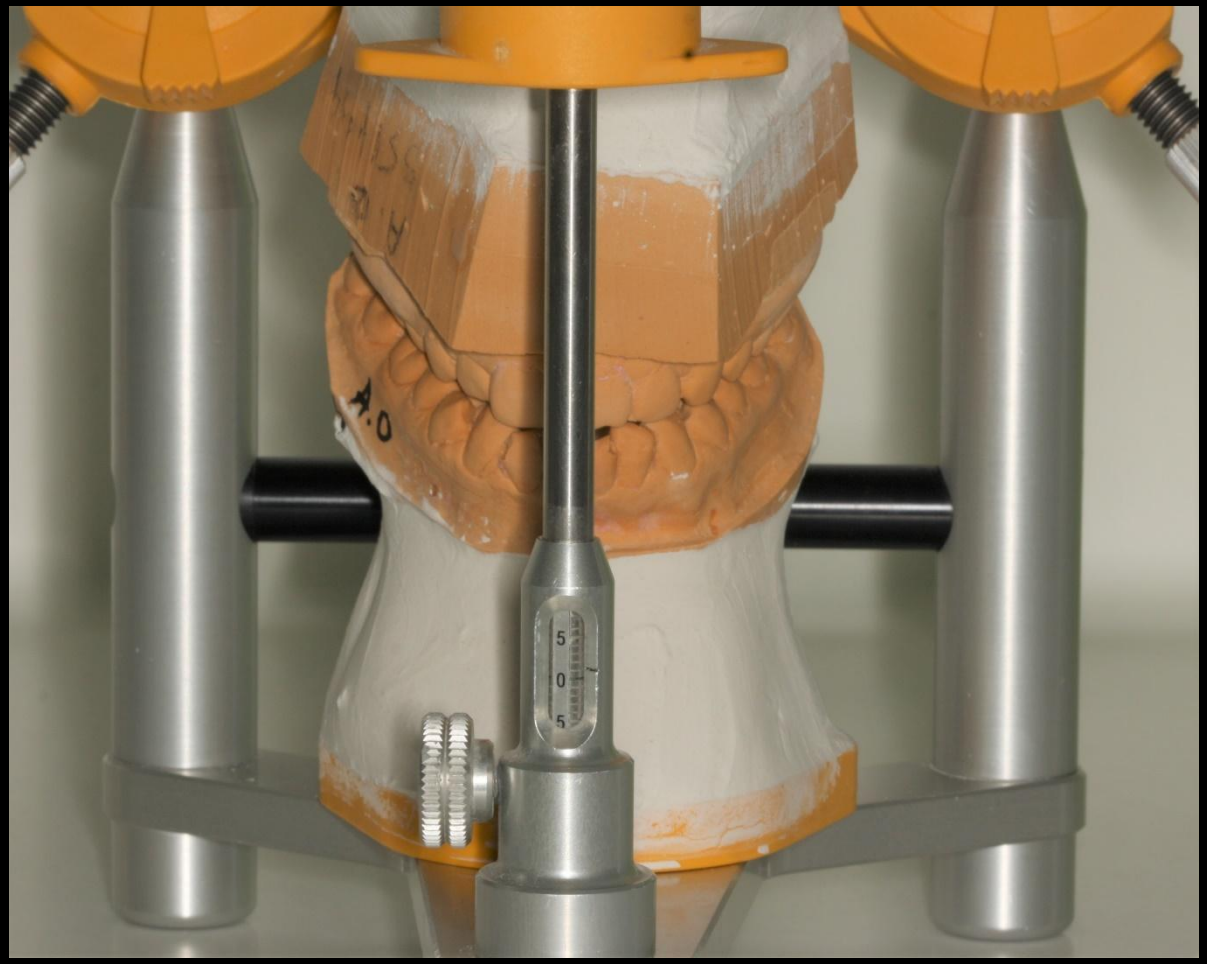
**R ( O/C 3)**

- S: 2.24mm, SCI: 63.32
- X: 1.01mm
- -Y: 0.53mm
- Z: 2.01mm

**L ( O/C 3 )**

- S: 3.13mm, SCI: 65.72
- X: 1.24mm
- Y: -0.51mm
- Z: 2.86mm

# TRP

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165137

# Treatment

- Refer patient to GP to extract 48.
- Bond U/LA.
- Level- Align. Insert 1 TAD between 13-15, use sliding hook and OCS on 13, bypass 15, 16 and activate OCS from the TAD to protract right anterior teeth and open space for implant restoration of 14.
- Use MEAW in both arches with strong tip back bends in the LAW , moderate in the UAW + short Class III elastics + Mullingan overlay enlargement AW in the UAW . This approach will upright the lower teeth and facilitate the forward adaptation of the mandible.
- At the final stages of the treatment flatten the UAW and make step up bends posteriorly in the LAW + anterior and posterior vertical elastics to steepen the POP ( mandible adapts in a clockwise pattern)
- Coordinate both arches . Detailing.
- Retention: U/L Hawleys.