
Size designation of clothes —

Part 5:

Anthropometric measurements for the head and face

Désignation des tailles de vêtements —

Partie 5: Mesures anthropométriques de la tête et du visage

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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 133, *Clothing sizing systems - size designation, size measurement methods and digital fittings*.

A list of all parts in the ISO 8559 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document can be used in conjunction with national, regional or international regulations or agreements to standardize the measuring or control points of head and face for data collection of population groups and to allow comparison of anthropometric data sets.

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Size designation of clothes —

Part 5:

Anthropometric measurements for the head and face

1 Scope

This document provides a description of anthropometric measurements for the head and face that can be used as a basis for creating physical and digital anthropometric databases. The list of measurements specified in this document is intended to help practitioners in the field of clothing who need to apply their knowledge to select population market segments and to create size and shape profiles for the development of all headwear garment types that extend from the torso and shoulder to the neck and head and their equivalent fitness.

The list provides guidance for taking anthropometric measurements and gives information on the principles of measurement and their underlying anatomical and anthropometrical bases relevant to clothing product development teams and head and face wear manufacturers.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 Landmark points and levels

3.1.1

superaurale point

highest point on the helix of the outer ear, while the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 1](#).

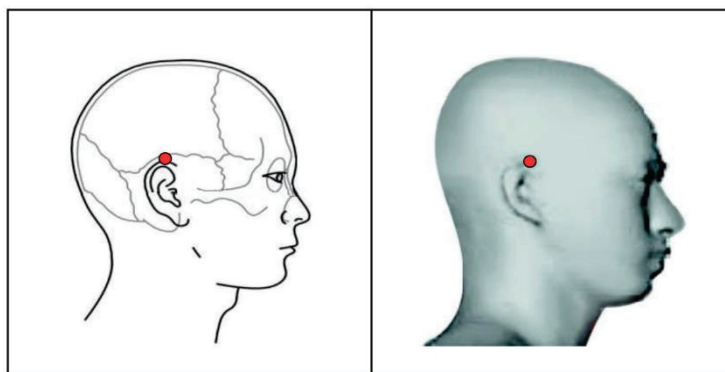


Figure 1 — Superaurale point

3.1.2

sellion

deepest depression point of the nasal bones in the mid-sagittal plane, while the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 2](#).

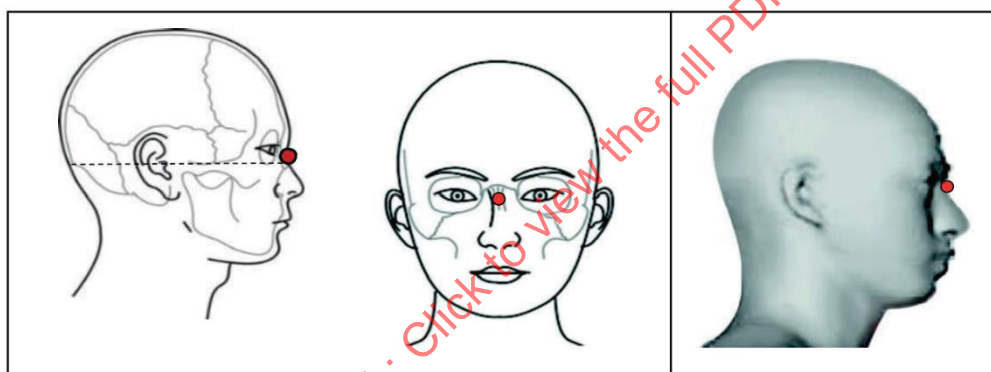


Figure 2 — Sellion

3.1.3

pronasale point

tip of the nose

most anterior point on the nose tip in the mid-sagittal plane, while the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 3](#).

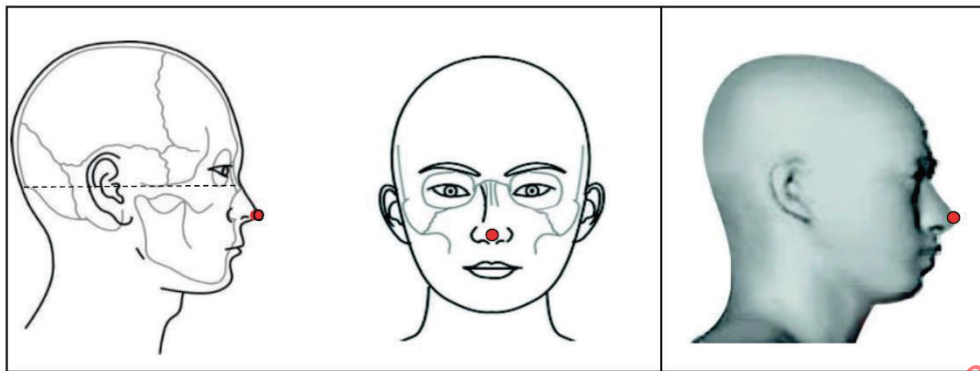


Figure 3 — Pronasale point

3.1.4

subnasale point

point at the juncture between lower surface of the nose and the philtrum in the mid-sagittal plane

Note 1 to entry: See [Figure 4](#).

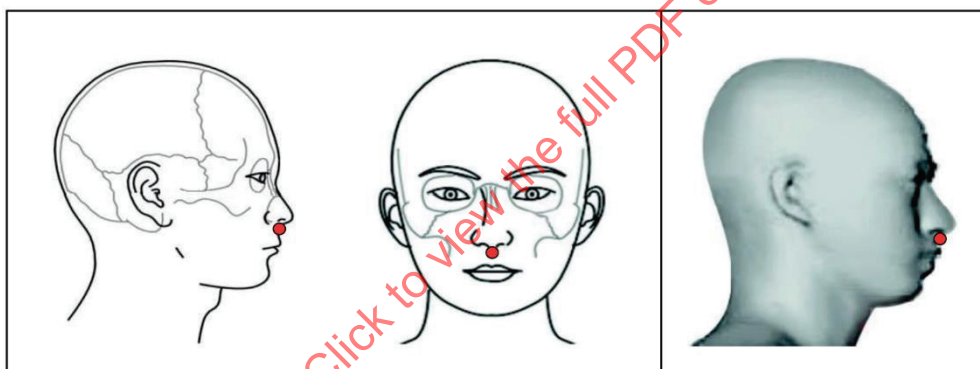


Figure 4 — Subnasale point

3.1.5

mandibular point

most lateral, most inferior, and most posterior point on the angle of the mandible, while the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 5](#).

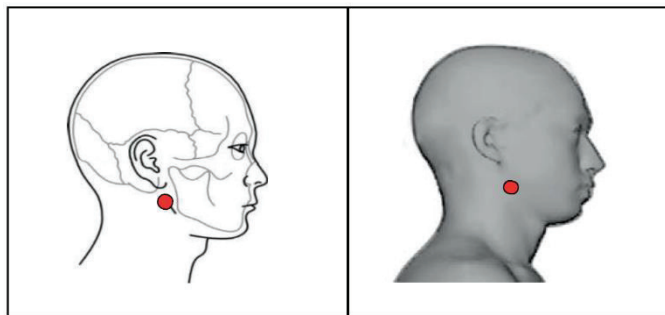


Figure 5 — Mandibular point

3.1.6

rearmost point of the head

most distant point from glabella while the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 6](#).

Note 2 to entry: Identical to Opisthocranion in ISO 7250-1.

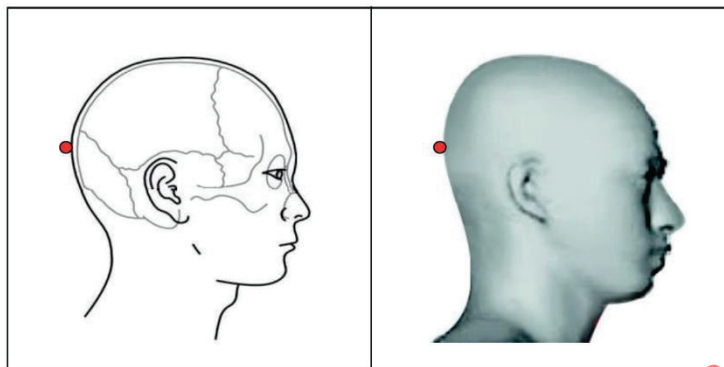


Figure 6 — Rearmost point of the head

3.1.7

side point of the head

most lateral point of the head while the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 7](#).

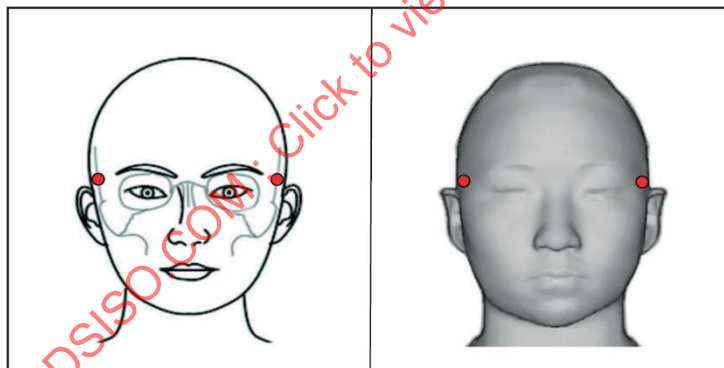


Figure 7 — Side point of the head

3.1.8

side point of the face

zygion

most lateral point on the zygomatic arch while the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 8](#).

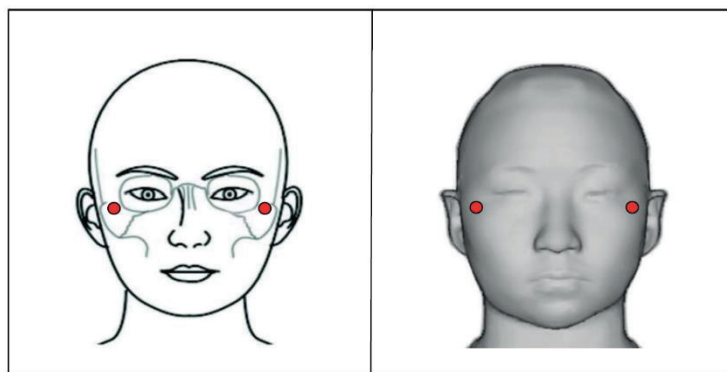


Figure 8 — Side point of the face

3.1.9

forehead level

level midway between the centre point of brow ridge and the level of the top point of the head

Note 1 to entry: See [Figure 9](#).

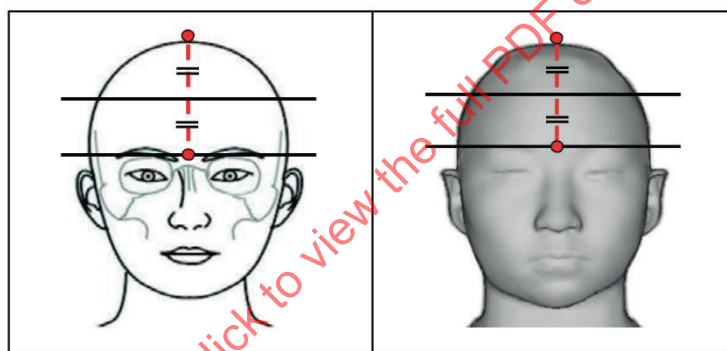


Figure 9 — Forehead level

3.2 Lines and planes

3.2.1

sagittal plane

antio-posterior (front to back) median plane of the body

Note 1 to entry: See [Figure 10](#).

[SOURCE: ISO 8559-1: 2017, 3.2.4, modified — Replaced term with "sagittal plane".]

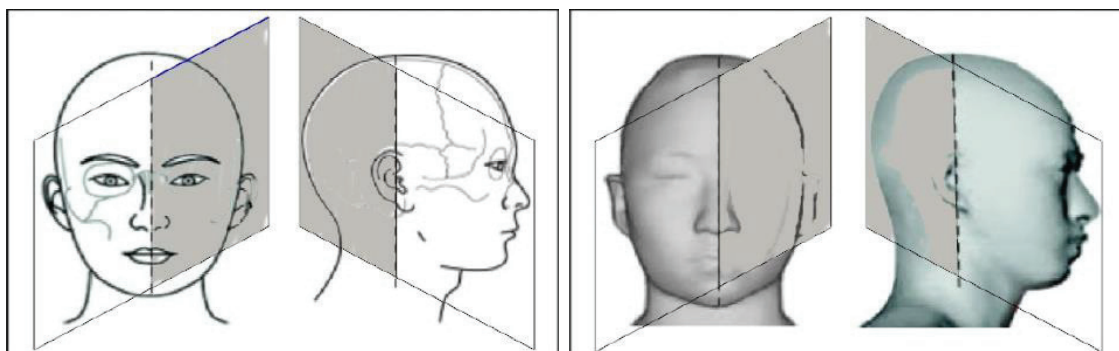


Figure 10 — Sagittal plane

3.2.2

Frankfurt plane

standard horizontal plane at the level of the left tragon, upper border of the cartilaginous flap in front of the ear hole (tragus), and the left orbitale, the lower border of the orbital margin, when the mid-sagittal plane of the head is held vertically

Note 1 to entry: See [Figure 11](#).

[SOURCE: ISO 8559-1: 2017, 3.2.5]

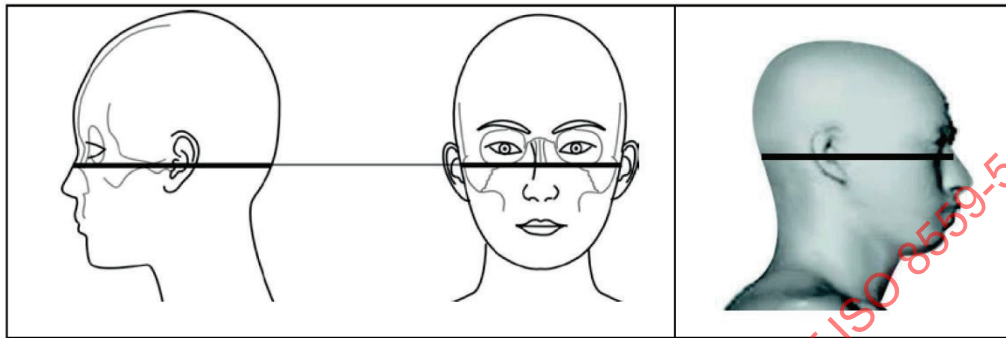


Figure 11 — Frankfurt plane

4 Measuring conditions and equipment

4.1 Conditions and apparatus

4.1.1 Body symmetry

As measurements can be taken on either side of the body, it shall be indicated on which side the measurement was taken.

4.1.2 Posture

The subject shall sit looking straight and with their teeth together. The head shall be held in the Frankfurt plane.

4.1.3 Other requirements

Measurements shall be taken with the subject breathing normally and shall be recorded accurately to the nearest millimetre.

4.2 Equipment

4.2.1 General

All equipment shall be calibrated and verified for accuracy both before and during use.

4.2.2 Tape measure

Tape measure shall be accurately graduated in millimetres, and the width shall be between 5 mm and 10 mm. Tape measure shall be used to measure girth and surface distance measurements.

4.2.3 Spreading caliper, sliding caliper and pupillometer

Spreading caliper, sliding caliper and pupillometer shall be used for measuring the width, breadth and depth of the head, face and neck segments, as well as the distances between reference marks.

5 Basic head and face measurements

5.1 Arc length and girth measurements

5.1.1 Head girth

Measurement: Maximum, approximately horizontal, girth of head measured above centre point of the brow ridge and crossing the rearmost point of the head. The hair shall be included in the measurement (see [Figure 12](#)).

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 12](#).

NOTE Identical to the head circumference in ISO 7250-1.

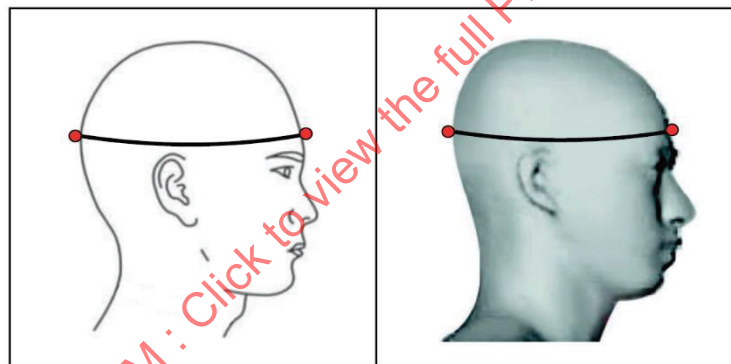


Figure 12 — Head girth

5.1.2 Centre point of brow ridge to rearmost point of the head

Measurement: Arc length measured from the centre point of the brow ridge, crossing the top point of the head to the rearmost point of the head.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 13](#).

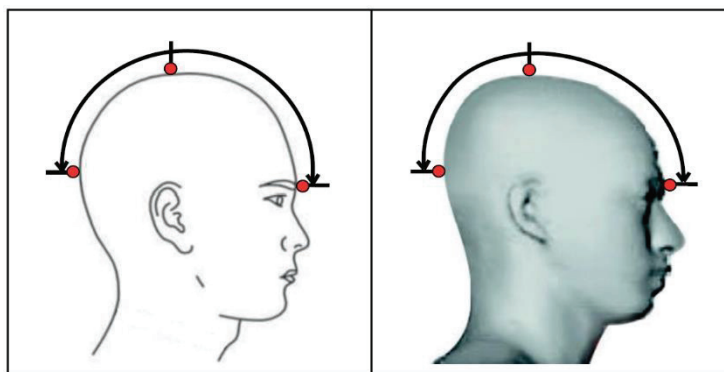


Figure 13 — Centre point of brow ridge to rearmost point of the head

5.1.3 Centre point of brow ridge to back neck point

Measurement: Surface distance measured from the centre point of the brow ridge, crossing the top point of the head to the back neck point.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 14](#).

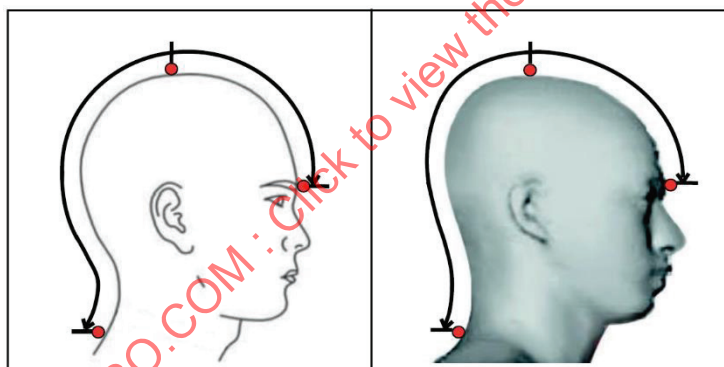


Figure 14 — Centre point of brow ridge to back neck point

5.1.4 Sagittal arc anterior

Measurement: Arc length from the centre point of the brow ridge to the top point of the head.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 15](#).

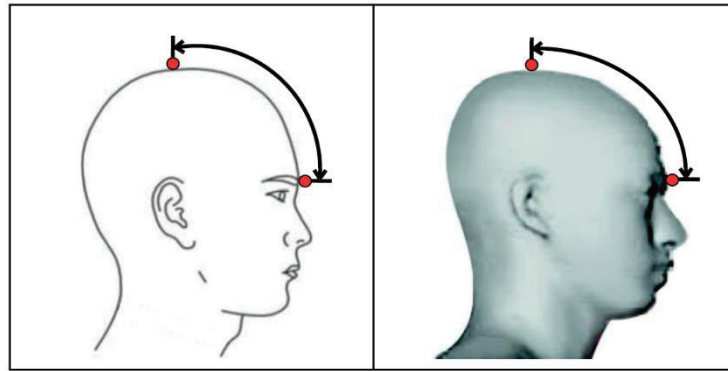


Figure 15 — Sagittal arc anterior

5.1.5 Sagittal arc posterior

Measurement: Arc length from the top point of the head to the rearmost point of the head.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 16](#).

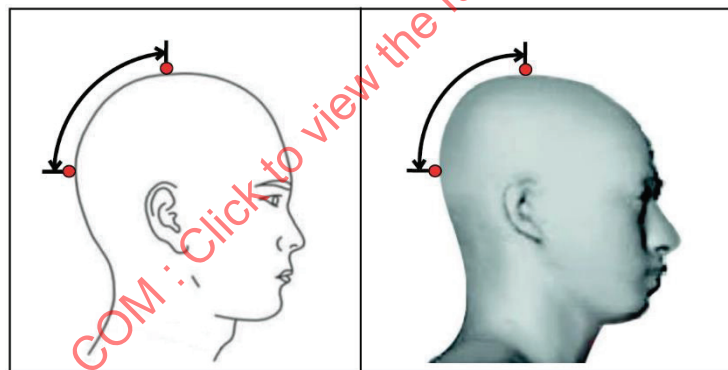


Figure 16 — Sagittal arc posterior

5.1.6 Bitragion coronal arc

Measurement: Coronal arc length between right and left tragions crossing the top point of the head.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 17](#).

NOTE Identical to bitragion arc in ISO 7250-1.

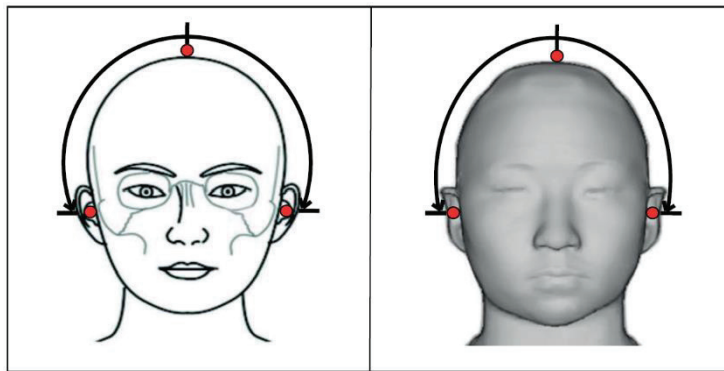


Figure 17 — Bitracion coronal arc

5.1.7 Bitracion sellion arc

Measurement: Arc length over the surface of the face between the right and left tragions, crossing the sellion.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 18](#).

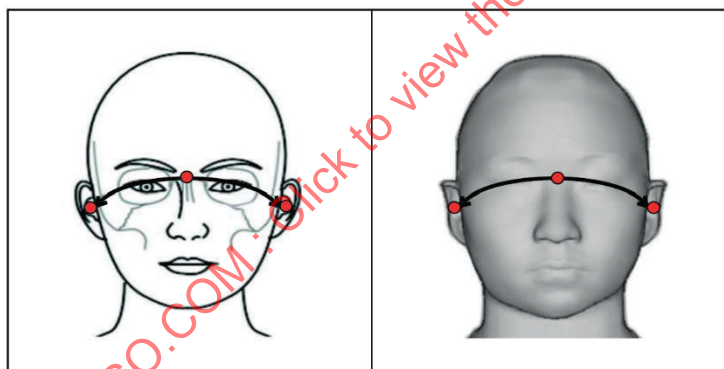


Figure 18 — Bitracion sellion arc

5.1.8 Bitracion subnasale arc

Measurement: The arc length over the surface of the face between the right and left tragions, across the subnasale point.

Position: Subject sits looking straight ahead.

Equipment: Tape measure.

See [Figure 19](#).

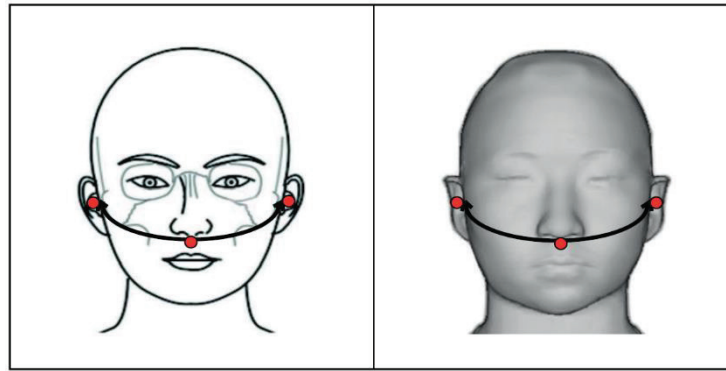


Figure 19 — Bitracion subnasale arc

5.1.9 Bitracion chin arc

Measurement: Arc length over the surface of the face between the right and left tragions, across the lowest point of chin.

Position: Subject sits looking straight ahead.

Equipment: Tape measure.

See [Figure 20](#).

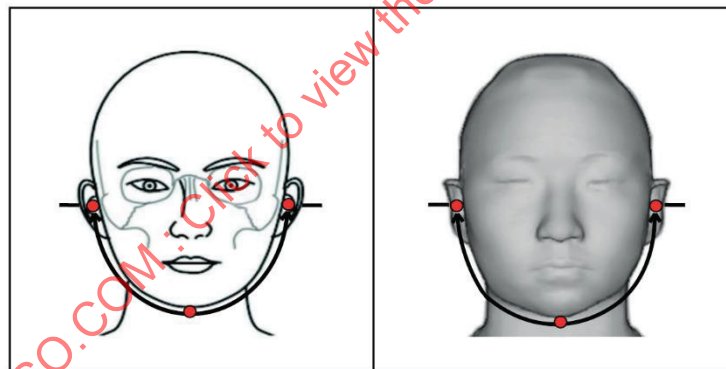


Figure 20 — Bitracion chin arc

5.1.10 Neck base girth

Measurement: Girth of the base of the neck measured over the back neck point and the front neck point.

Position: Subject sits or stands erect with head in the Frankfurt plane.

Equipment: Tape measure or chainette and scale.

See [Figure 21](#).

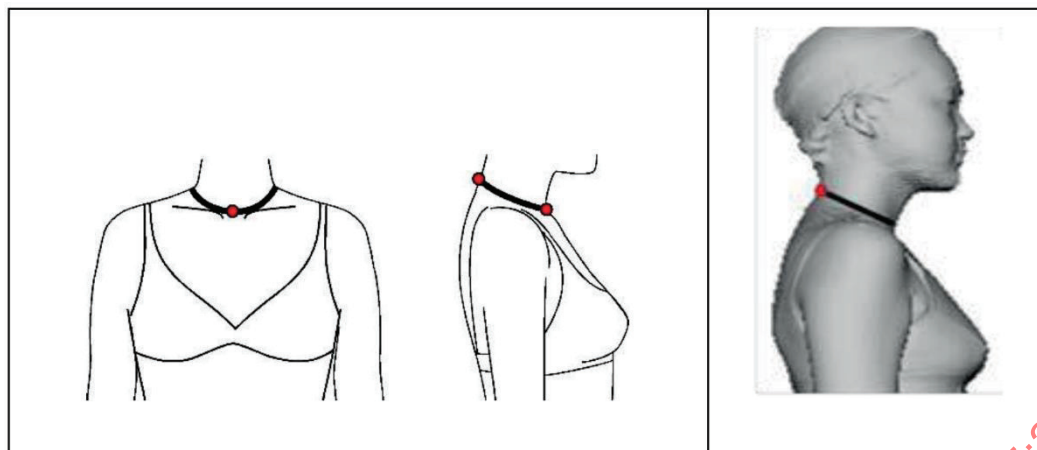


Figure 21 — Neck-base girth

5.1.11 Side neck points coronal arc

Measurement: Arc length between the right and left side neck points, crossing the top point of the head.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Tape measure.

See [Figure 22](#).

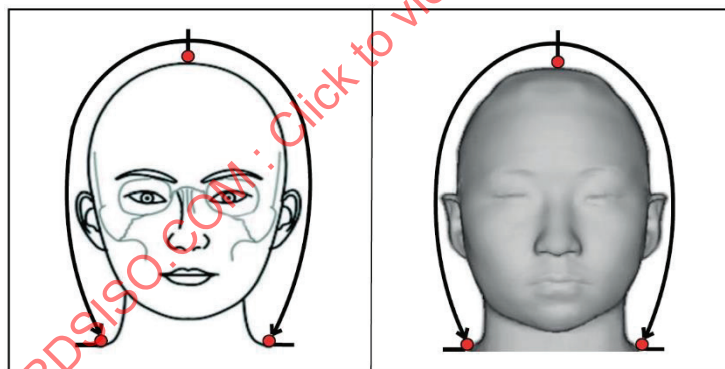


Figure 22 — Side neck points coronal arc

5.2 Widths measured on the face

5.2.1 Head width

Measurement: Distance between the left side point of the head and the right side point of the head.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Spreading caliper.

See [Figure 23](#).

NOTE Identical to head breadth in ISO 7250-1.

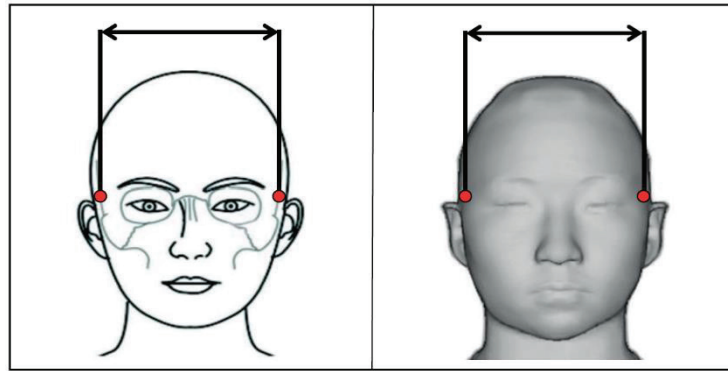


Figure 23 — Head width

5.2.2 Face width

Measurement: Distance between the side points of the face.

Position: Subject sits looking straight ahead.

Equipment: Spreading caliper.

See [Figure 24](#).

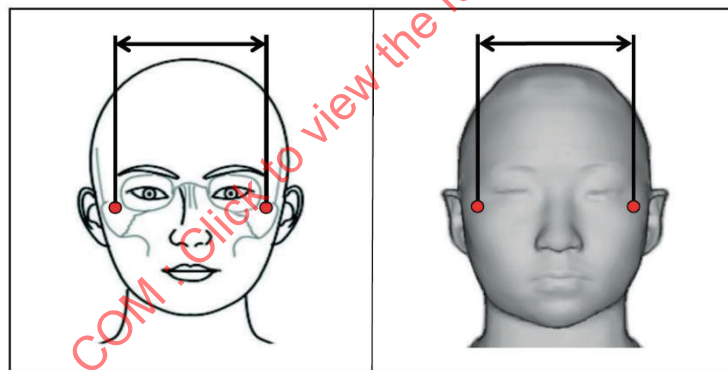


Figure 24 — Face width

5.2.3 Bitrignon width

Measurement: Distance between the left trignon and the right trignon.

Position: Subject sits looking straight ahead.

Equipment: Spreading caliper.

See [Figure 25](#).

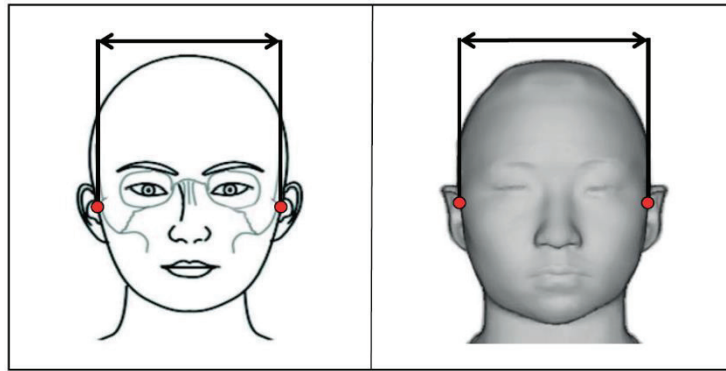


Figure 25 — Bitracion width

5.2.4 Bi-inner eye corner width

Measurement: Distance between the left inner corner point of the eye and the right inner corner point of the eye.

Position: Subject sits looking straight ahead.

Equipment: Sliding caliper.

See [Figure 26](#).

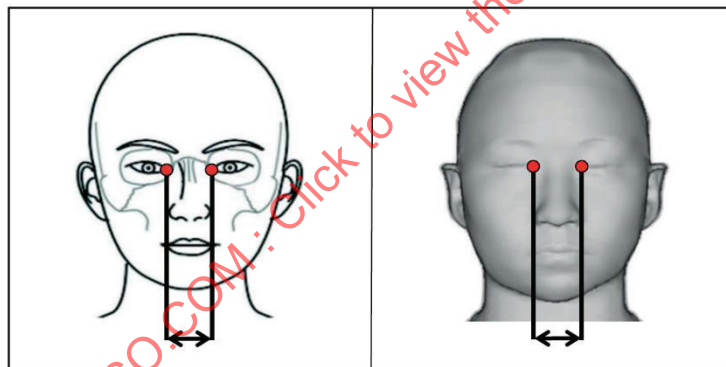


Figure 26 — Bi-inner eye corner width

5.2.5 Interpupillary width

Measurement: Distance between the left pupil point and the right pupil point.

Position: Subject sits looking straight ahead.

Equipment: Pupillometer.

See [Figure 27](#).

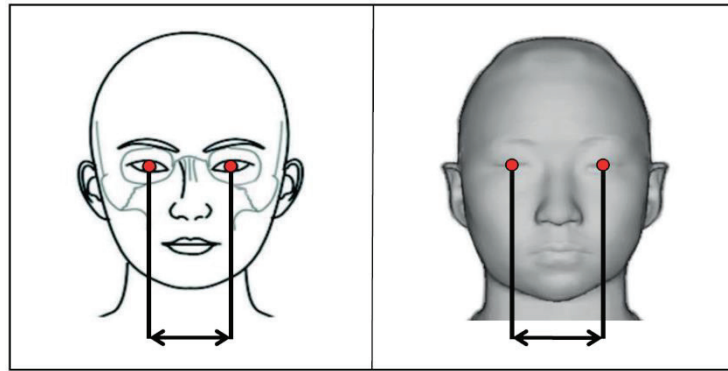


Figure 27 — Interpupillary width

5.2.6 Bi-outer eye corner width

Measurement: Distance between the left outer eye corner point and the right outer eye corner point.

Position: Subject sits looking straight ahead.

Equipment: Sliding caliper.

See [Figure 28](#).

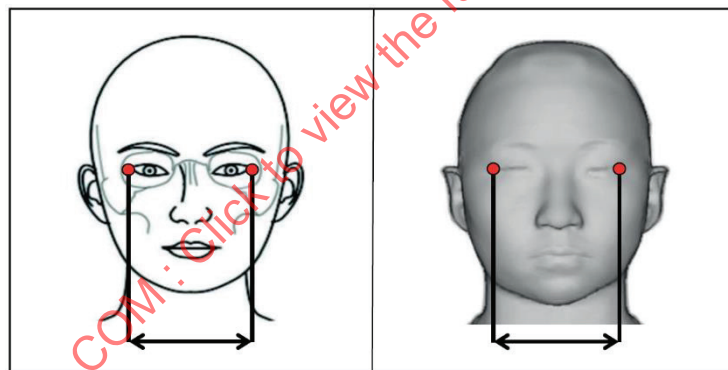


Figure 28 — Bi-outer eye corner width

5.2.7 Nose width

Measurement: Distance between left and right of nose wing points.

Position: Subject sits looking straight ahead.

Equipment: Sliding caliper.

See [Figure 29](#).

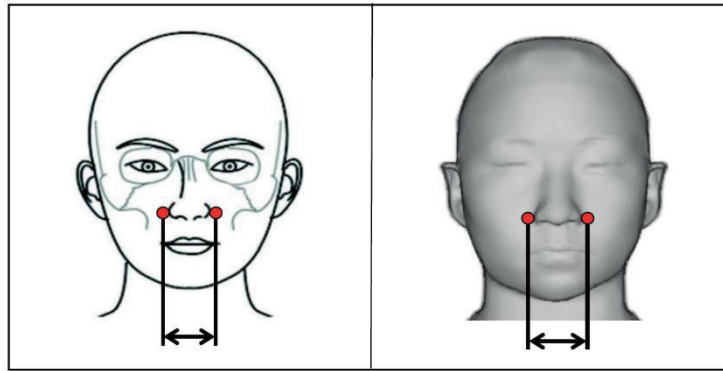


Figure 29 — Nose width

5.2.8 Mouth width

Measurement: Distance between the left and right mouth corner points.

Position: Subject sits looking straight ahead with mouth closed.

Equipment: Sliding caliper.

See [Figure 30](#).

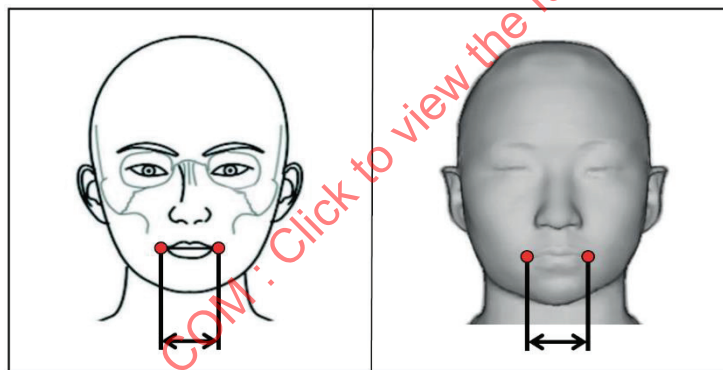


Figure 30 — Mouth width

5.2.9 Bi-mandibular width

Measurement: Distance between the right and left mandibular points.

Position: Subject sits looking straight ahead with the teeth together.

Equipment: Spreading caliper.

See [Figure 31](#).

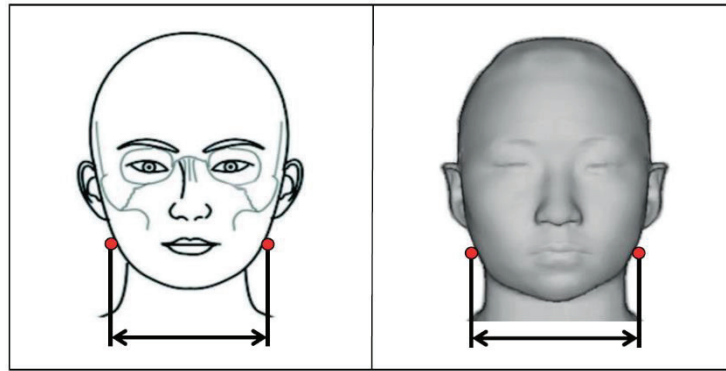


Figure 31 — Bi-mandibular width

5.3 Point to point distance (height) measured on the face

5.3.1 Physiognomic face height

Measurement: Distance from the forehead level to the lowest point of chin.

Position: Subject sits looking straight ahead with the teeth together and head in the Frankfurt plane.

Equipment: Large sliding caliper.

See [Figure 32](#).

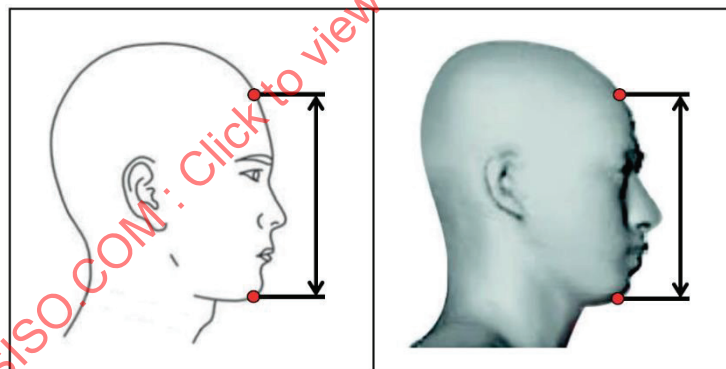


Figure 32 — Physiognomic face height

5.3.2 Upper face height

Measurement: Distance from the forehead level to the centre point of the brow ridge.

Position: Subject sits looking straight ahead with the teeth together and head in the Frankfurt plane.

Equipment: Sliding caliper.

See [Figure 33](#).

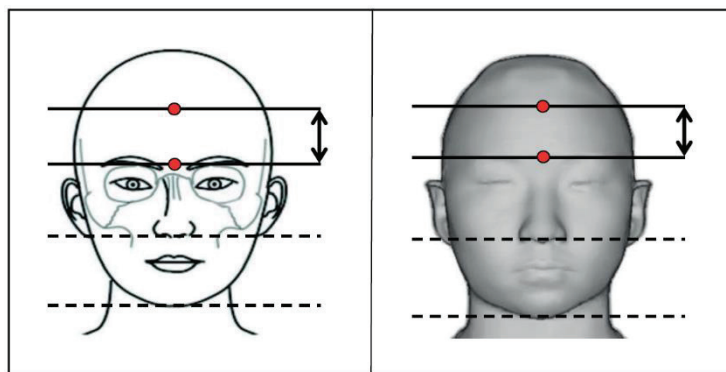


Figure 33 — Upper face height

5.3.3 Middle face height

Measurement: Distance from the centre point of the brow ridge to the subnasale point.

Position: Subject sits looking straight ahead with the teeth together and head in the Frankfurt plane.

Equipment: Sliding caliper.

See [Figure 34](#).

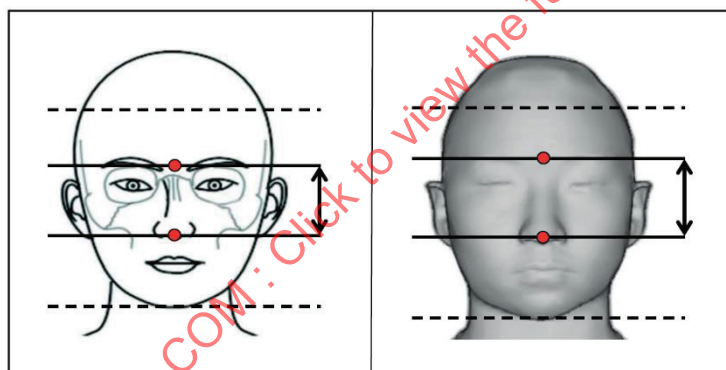


Figure 34 — Middle face height

5.3.4 Lower face height

Measurement: Distance from the subnasale point to the lowest point of chin.

Position: Subject sits looking straight ahead with the teeth together and head in the Frankfurt plane.

Equipment: Sliding caliper.

See [Figure 35](#).

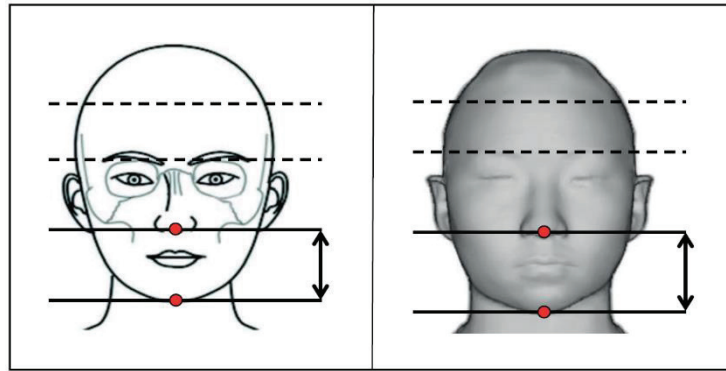


Figure 35 — Lower face height

5.3.5 Nose depth

Measurement: Distance from the subnasale point to the pronasale point of the nose.

Position: Subject sits looking straight ahead.

Equipment: Sliding caliper.

See [Figure 36](#).

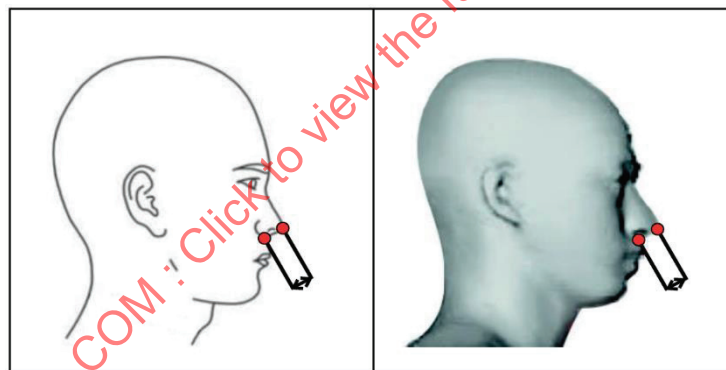


Figure 36 — Nose depth

5.3.6 Nose length

Measurement: Distance from the sellion to the pronasale point.

Position: Subject sits looking straight ahead.

Equipment: Sliding caliper.

See [Figure 37](#).

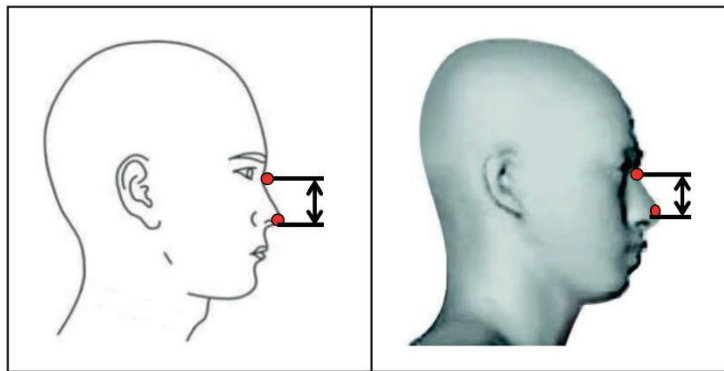


Figure 37 — Nose length

5.3.7 Trignon to centre point of oral slit distance

Measurement: Distance projected to the median plane from the trignon to the centre point of the oral slit. Anterior-posterior horizontal distance.

Position: Subject sits looking straight ahead with the teeth together.

Equipment: Spreading scale.

See [Figure 38](#).

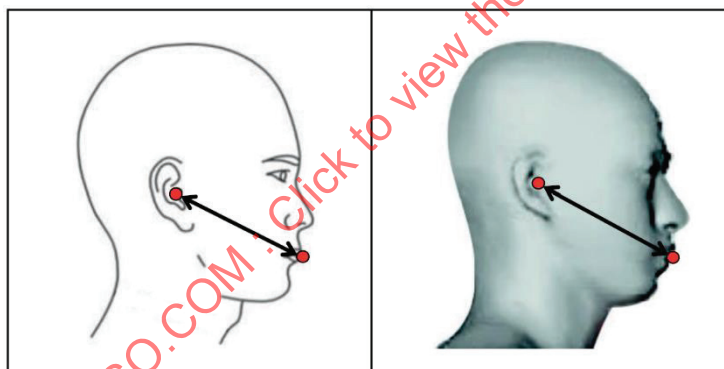


Figure 38 — Trignon to centre point of oral slit distance

5.4 Distance measured on the head

5.4.1 Rearmost point of the head to centre point of brow ridge

Measurement: Point-to-point distance between the rear most point of the head and the centre point of the brow ridge.

Position: Subject sits looking straight ahead.

Equipment: Spreading caliper.

See [Figure 39](#).

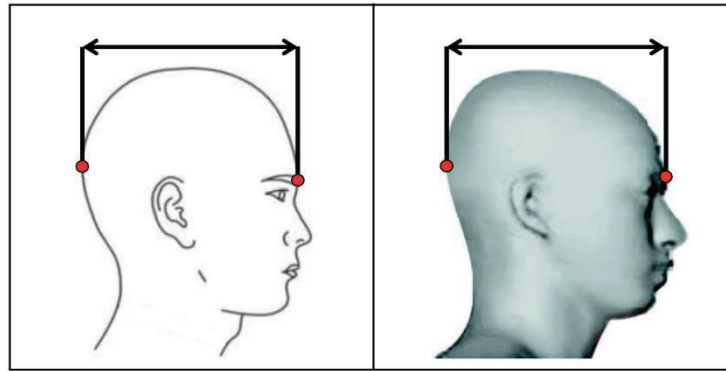


Figure 39 — Rearmost point of the head to centre point of brow ridge

5.4.2 Rearmost point of the head to sellion

Measurement: Point to point distance between the rearmost point of head and the sellion point of the head.

Position: Subject sits looking straight ahead.

Equipment: Spreading caliper.

See [Figure 40](#).

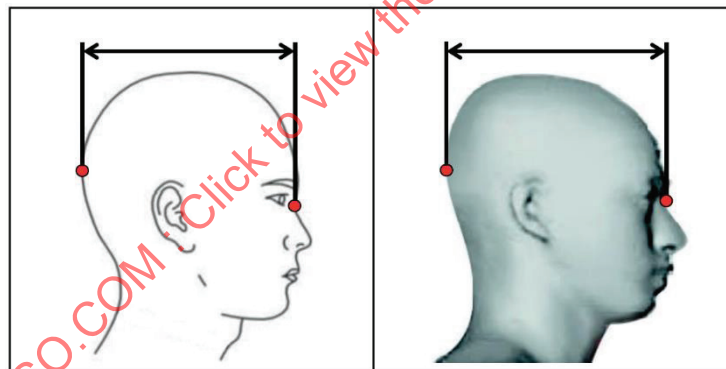


Figure 40 — Rearmost point of the head to sellion

5.4.3 Trignon to sellion

Measurement: Point to point distance between the trignon and the sellion.

Position: Subject sits looking straight ahead with head in the Frankfurt plane.

Equipment: Spreading caliper.

See [Figure 41](#).

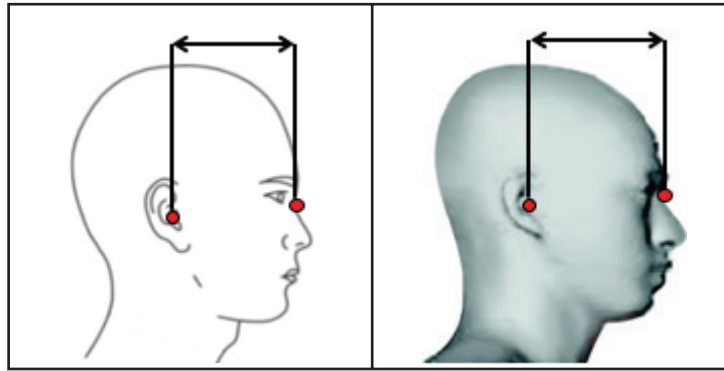


Figure 41 — Tragion to sellion

5.4.4 Superaurale point to outer eye corner point

Measurement: Point to point distance between the superaurale point and the outer eye corner point.

Position: Subject sits looking straight ahead.

Equipment: Spreading caliper.

See [Figure 42](#).

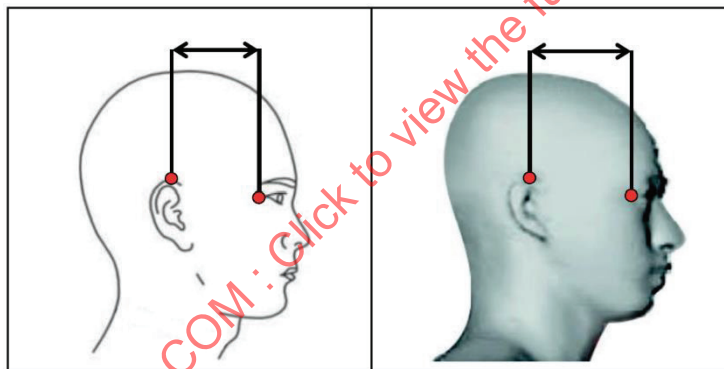


Figure 42 — Superaurale point to outer eye corner point

5.4.5 Tragion to pronasale point

Measurement: Point to point distance between the tragion and the pronasale point.

Position: Subject sits looking straight ahead.

Equipment: Spreading caliper.

See [Figure 43](#).