Anterior Guidance

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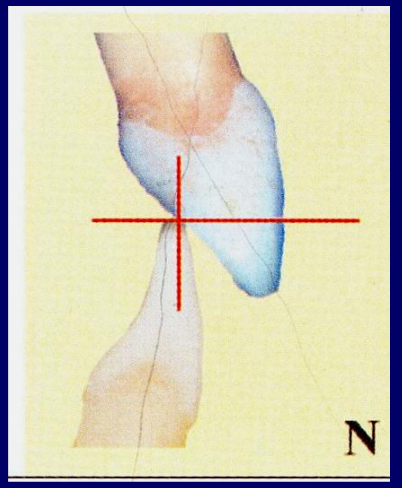
- Role of the anterior guidance
- Impact of the anterior guidance on occlusal morphology
- Factors determining the anterior guidance
- Requirements of a harmonized guidance
- Occlusal schemes

Definition

- Dynamic relationship of the lower anterior teeth against the upper anterior teeth through all ranges of function

- Determined not only by the position of the anterior teeth but also by the contour of their palatal surfaces and the inter and intra arch relationships

- Linked to the vertical and horizontal overlap of the anterior teeth

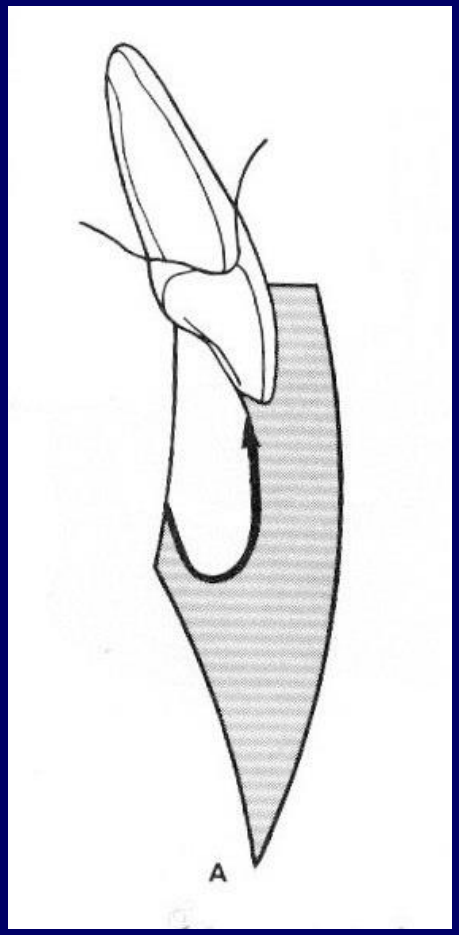


Definition

• On a dynamic level it represents the superior part of the envelope of motion.

• The path that the condyles travel dictates the outer limits to which the mandible move (**envelope of motion**)

• The path that the front end of the mandible travels is dictated by functional movements of muscles as it relates the lower teeth to the upper teeth in a chewing cycle. The outer limits of these functional movements is referred to as the (**envelope of function**)



Definition

- besides the centric relation the anterior guidance is the most important determinant in restoring occlusion

- Besides being the visible part of the smile, the anterior guidance is the principal determinant of posterior occlusal form

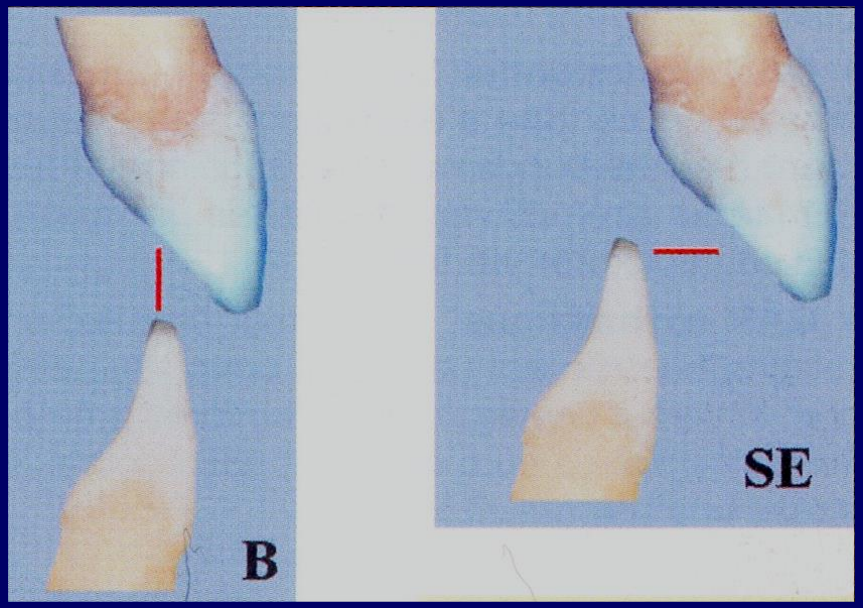
- Characterizes the different possible relationships between the upper anterior teeth and lower (static and dynamic)

Sometimes this guidance is different or even non existing in:

open bite

large horizontal overlap

edge to edge incisal relation

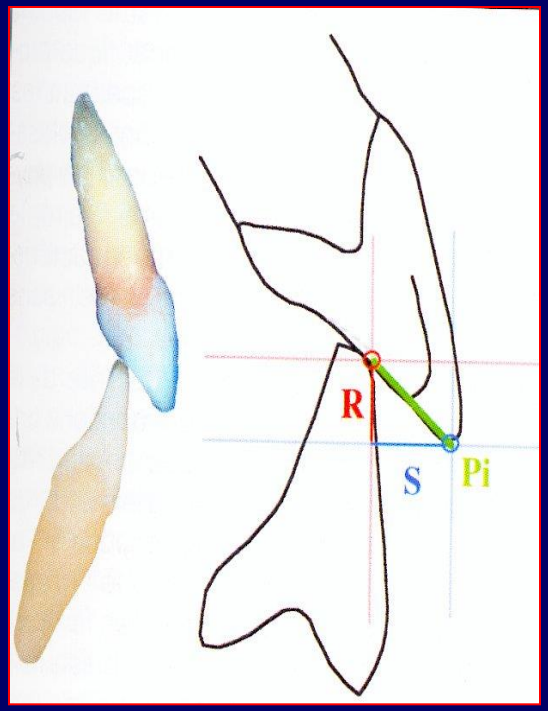


Terminology

- During protrusive movements of the mandible, the incisal edges of mandibular anterior teeth move forward and downward along the lingual concavities of the maxillary anterior teeth.

- The track of the incisal edges from maximum intercuspation to edge to edge occlusion is termed the protrusive incisal path

- The angle formed by the protrusive incisal path and the horizontal reference plan is termed protrusive incisal path inclination which ranges from 50-70 degrees

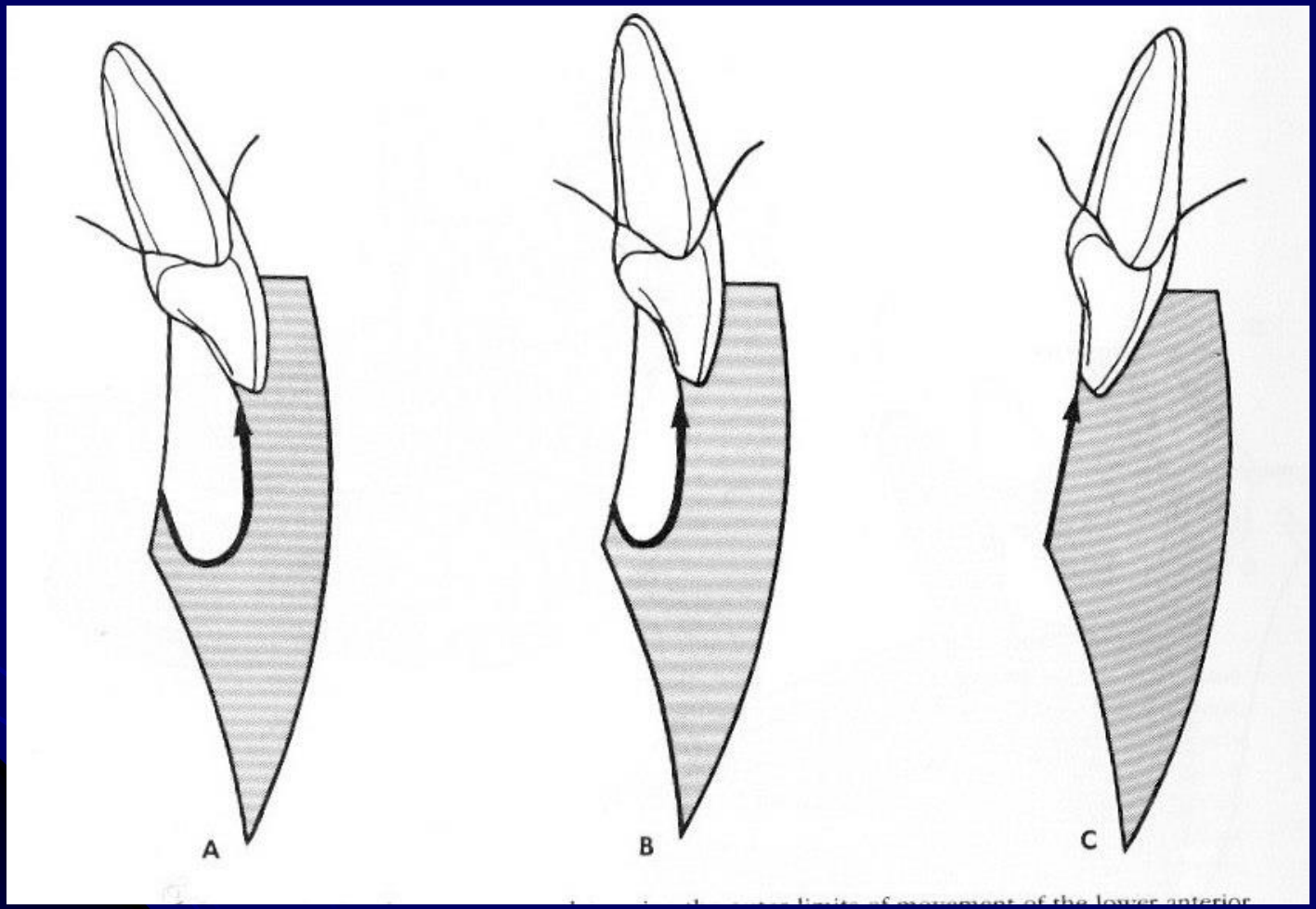


Relationships between anterior and posterior guidance

condylar paths do not dictate anterior guidance

While conventionally regarded as independent factors, in healthy occlusion it was found that the anterior guidance is approximately 5 to 10 degrees steeper than the condylar inclination

The anterior guidance is most often a mirror image of the condylar path. Thus these two determinant have a complimentary relationship


A
B
C

Role of the Anterior Guidance

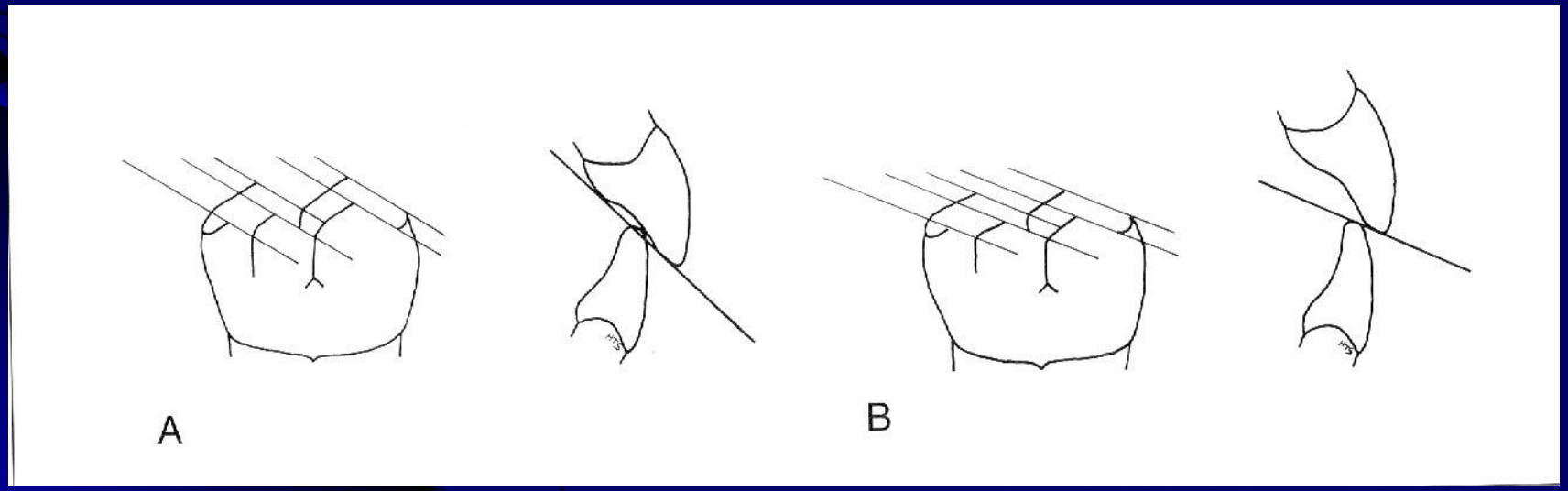
- Phonetics
- Esthetics
- Determine the envelope of function
- Protection of posterior teeth during eccentric mandibular movements

The esthetic part of the anterior teeth is provided by the ***form and the position of teeth***, however the protective part is provided by the ***lingual contour ;*** the contacts established between the maxillary and mandibular teeth in centric as well as protrusive and lateral excursions.

Impact of the Anterior Guidance on Occlusal Morphology

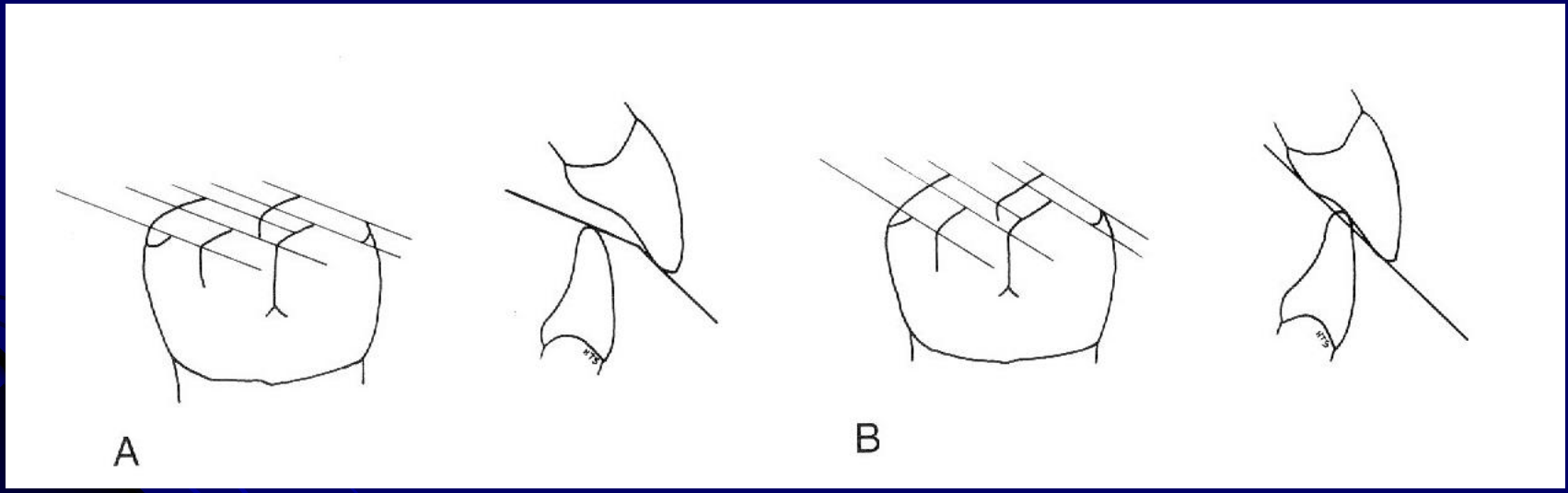
The occlusal contours of all posterior teeth and their morphology is dictated by both anterior as well as condylar guidance.

The greater the vertical overlap of the anterior teeth is the longer the posterior cusp may be.



Impact of the Anterior Guidance on Occlusal Morphology

The greater the horizontal overlap is the shorter the cusp height should be.



While when the curve of spee and the occlusal plan are accentuated the greater or steeper the anterior guidance should be.

Factors influencing the Anterior Guidance

1- Position of mandibular incisors

level of the incisal edge, axial angle in relation to the lower border of the mandible and to the occlusal plane

2- Position of maxillary teeth

vertical plane (overbite)

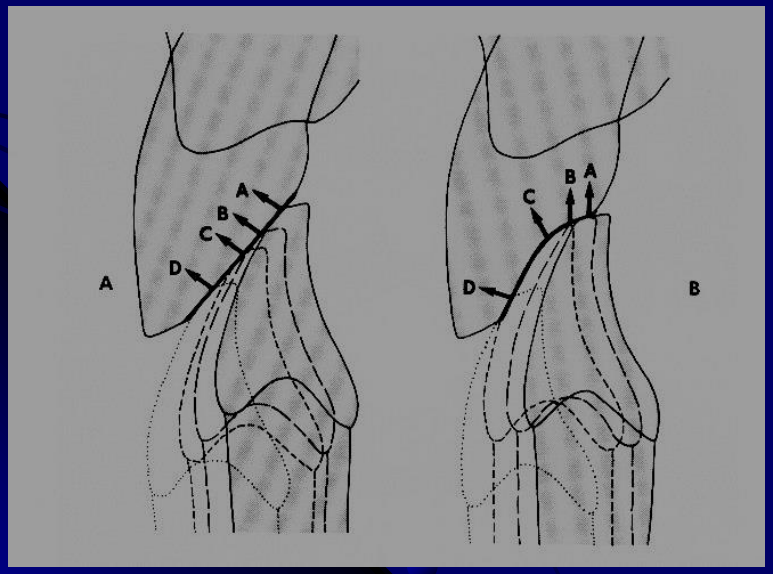
horizontal plane (overjet)

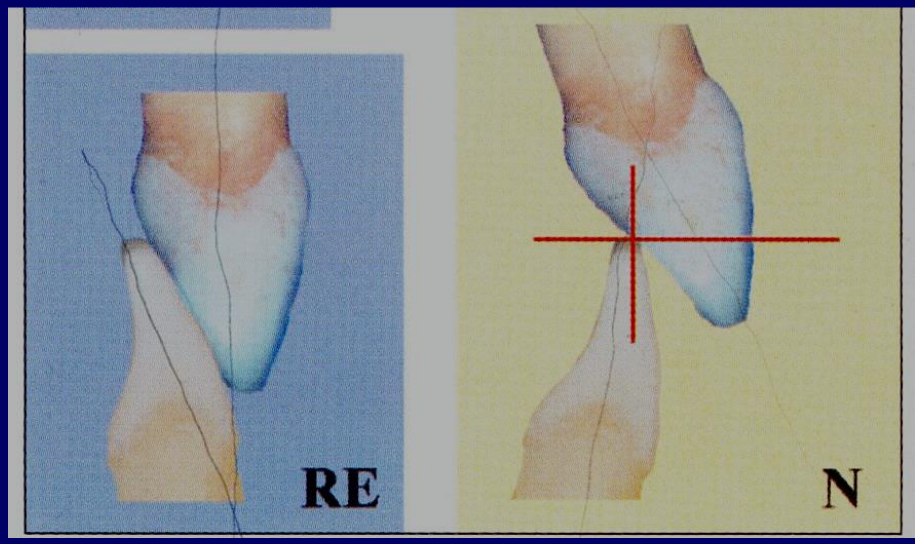
absence or exageration would lead into an abnormal anterior guidance;

Factors influencing the Anterior Guidance

3- Envelope of function

Depends on the palatal surfaces of the maxillary anterior teeth as well as the angle between the superior and inferior incisors





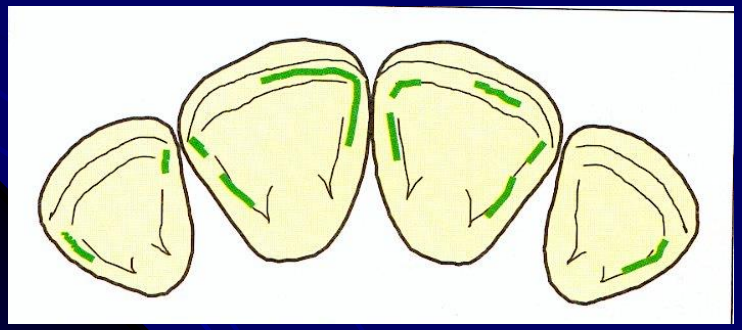
Requirements of a Harmonized Anterior Guidance

When closing into terminal hinge position of the mandible until the front teeth contact. If all the lower anterior teeth contact ***simultaneously against stable centric stops at the correct vertical dimension***, the first requirement of the good anterior relationship has been fulfilled.

Requirements of a Harmonized Anterior Guidance

Establish coordinated centric occlusion stops on all anterior teeth

Establish a group function in straight protrusive

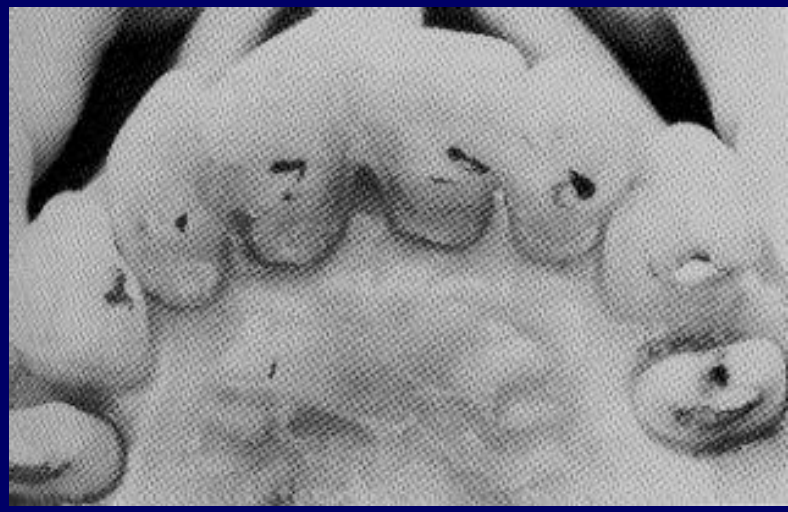


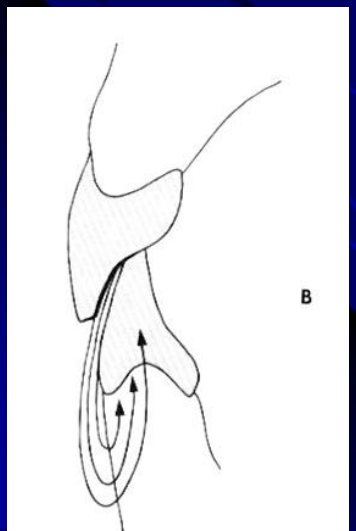
Establish ideal lateral function

Maximum comfort and stability may be achieved when

Stable holding contacts for each anterior tooth

Centric occlusion contacts occuring simultaneously and with equal intensity

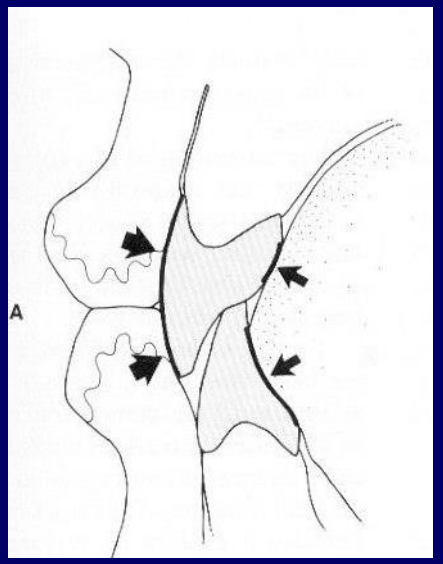




Position and contour of the anterior teeth in harmony with the envelope of motion.

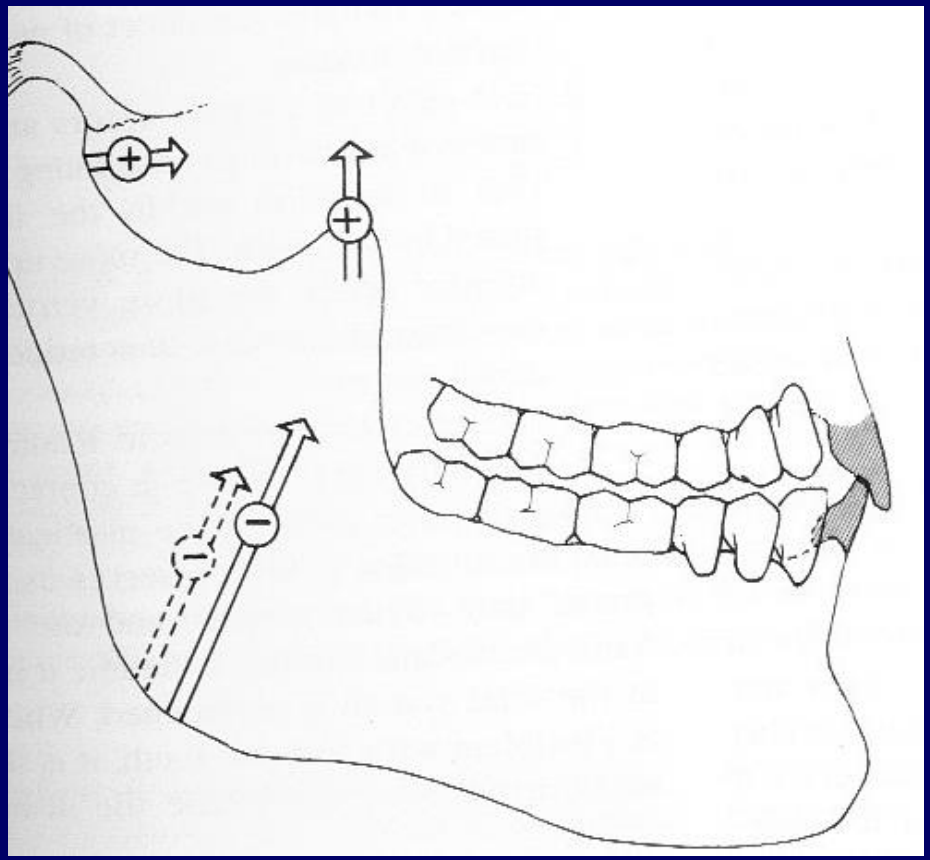
Maximum comfort and stability may be achieved when

Position and contour of all anterior teeth in harmony with the lip contour and the neutral zone.

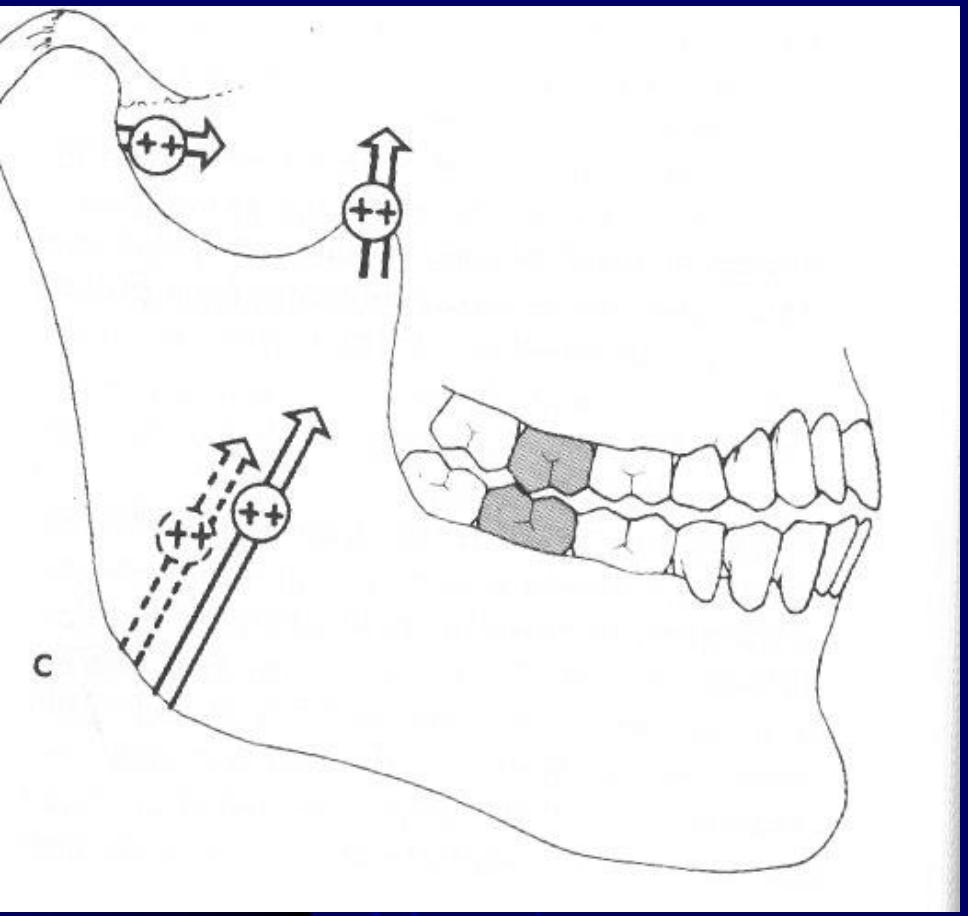


Immediate disclusion of all posterior teeth the moment the mandible leaves the centric relation position.

It has been shown that disclusion of the posterior teeth during protrusive and lateral excursions, reduces muscle contraction in two of the three elevators.



This enables us to reduce the load on both TMJ and the posterior teeth as well as anterior teeth. So the protection is assured.



If the anterior teeth wear or move or get loose they may loose the capacity to seperate the posterior teeth and thus premature contact may develop, so hyperactivity is developed in the elevator muscles and thus the load is increased on the whole system especially the anterior ones.

How can the anterior teeth reduce the stresses transmitted on them:

- The position of the anterior teeth in relation to the fulcrum and the muscular position
- The effect of proprioceptors around the anterior roots on programming the muscles to function within the limits imposed by the teeth, especialy the canine with its long root and critical position in the arch
- The reduction of muscle loading when only the anterior teeth are in contact