

# Activator : An Andresen Innovation

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## Abstract

**F**unctional orthodontic treatment has been proved to be one of the most effective and successful treatment modality in orthodontics. Functional appliances can only be applied in growing young patients. In the treatment of angle class II malocclusions the activator is often the appliance of choice. The activator might have an influence on the skeletal structures of the face as well as on the growth and position of mandibular arch.

**Key Words:** Class II Malocclusion, Mandibular retrognathism, Functional jaw orthopaedics, Activator.

## Introduction

Myofunctional appliances influence the facial skeleton of growing child and exert orthodontic effect on dentoalveolar area and best time for using it in growing phase in which the distobuccal cusp of the upper first permanent molar occlude in the mesiobuccal groove of the lower first permanent molar. Class II division I is probably one of the most disfiguring types of malocclusion causing early apprehension.<sup>1,2</sup> Growth timing in early stage of treatment, gives a greater chance to the effect of orthopedic force to aid in redirecting the growth pattern into more favorable correction of skeletal malrelation and improving the facial esthetic, in addition to the decision of the most effective technique to use in treatment of growing patients with skeletal and/or dental Class II malocclusion. This could be achieved through either extra oral force (maxillary head-gear) in cases diagnosed as maxillary excess or repositioning and encouraging the forward growth of the mandible by orthopedic myofunctional appliances.<sup>3,4</sup>

Functional appliances are commonly used for the treatment of Class II malocclusions with mandibular deficiency. The treatment goals are to reduce the large overjet and correct the sagittal skeletal discrepancy<sup>7</sup>. The success of treatment with a functional appliance relies on the patient's cooperation and favourable mandibular growth. Treatment with a functional appliance usually lasts for 9 to 12 months and requires a proper retention time to ensure complete musculoskeletal adaptation. A second stage of treatment with a full-fixed appliance is often required to achieve proper alignment and good interdigitation of the dentition<sup>8</sup>. Basically there are two categories

of functional appliances, removable and fixed. Activator, Frankel and Twin block are examples of removable one and, on the other hand, the Herbst appliance represents an example of fixed functional appliance.<sup>3,4</sup> The activator and its successors provide a greater contact area with the mandibular teeth and lingual mucosa, and thus are more effective in stimulating the patient to position the mandible forward constantly.

## Indications<sup>5,6</sup>

1. Class II division I malocclusion with sufficient overjet.
2. Class II caused by mandibular over closure that results in functional retrusion.
3. Class II division I malocclusion with posterior position of the mandible caused by growth deficiency but with likelihood of a future horizontal growth pattern.
4. Prevention and correction of oral habit, including thumb/ lip sucking, mouth breathing and oral functional aberrations.

## Contraindication<sup>5</sup>

1. Class II skeletal by maxillary prognathism
2. Vertical directed growers
3. Crowding
4. Labial tipping of lower incisors

## Discussion

Functional appliances are effective in treating skeletal class II malocclusion, particularly in cases with retrognathic mandible functional appliances are of greatest clinical benefit in actively growing patients with good compliance. These appliances position the mandible forward, promoting a new mandibular postural position. The reactive forces from the stretch of the muscles and soft tissues are transmitted to the maxillary dentition and through that, to the maxilla.

The acrylic body of the Andresen activator covers part of the palate and the lingual aspect of the mandibular alveolar ridge. A labial bow fits anterior to the maxillary incisors and carries U-loops for adjustment. On the palatal aspects of the maxillary incisors, the acrylic is relieved to allow their retraction. A main feature of the appliance is the faceting of the acrylic on palatal and lingual aspects of the maxillary and mandibular posterior teeth, respectively, designed to direct their eruption. On the palatal aspect of the maxillary posterior teeth the facets are cut so as to allow occlusal, distal

and buccal movement of these teeth. This movement is achieved by keeping the acrylic in contact with only the mesiopalatal surfaces of the premolars and molars. On the lingual aspect of the mandibular posterior teeth the facets only permit occlusal and mesial movement, with the acrylic contacting the distolingual surface of these teeth. The activator also had an influence on dentition. By inhibiting the maxillary dentoalveolar vertical growth and encouraging the mandibular dentoalveolar mesial and vertical development, the activator resolved the class II malocclusion to class I malocclusion.<sup>5,7,8</sup>

## Conclusion

Functional appliances can be used successfully to treat skeletal class II malocclusions in growing patients. The ideal case for such treatment are Class II division I malocclusion with retrognathic mandible, Low to average mandibular plane angle and Upright or lingually tipped lower incisors. The activator can solve many problems that become more severe if left untreated. The Activator cannot create a large mandible from a small one, but it can help the patient achieve the optimal size consistent with morphogenetic pattern. The restoration of the normal function is a major contribution to improvement in the morphofunctional interrelationship.

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