

## Evidence-Based Orthodontics in Treatment of Class II and III Malocclusion: Review

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**Abstract:** Evidence - based orthodontics (EBO) means integration of the best research evidence with clinical expertise, patient values and patient circumstances. The goal of this article is to assist the practitioner in understanding the evidence based orthodontics and provide them with the best available clinical guidelines on treatment of class II and class III malocclusions.

### I. Introduction

There are a number of steps involved in the practice of evidence-based orthodontics but a key component is accumulation of the highest quality evidence. Unfortunately, all research designs and research studies are not equal, It is important for the orthodontic practitioner to be able to assimilate the available evidence and provide the best treatment for their patients (1-4) .

In fact, EBO involve informed and effective use of all types of evidence, particularly evidence from the medical literature, in patient care. Ideally, systematic reviews, meta-analyses, randomized clinical trials and Well-designed observational studies provide the highest quality available evidence (1-6).

### The hierarchy of evidence

The hierarchy of evidence provides a universally accepted framework for ranking the best available evidence on the basis of study design. they are listed here in ascending order of merit (1-6) .

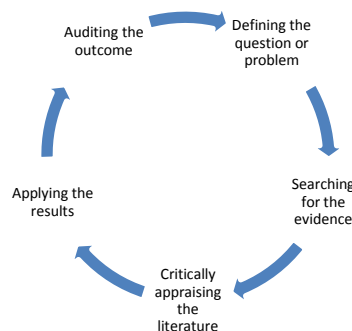


The Five steps to practicing evidence – based orthodontics

1-5)

1. Formulating the right clinical question
2. Finding the best evidence
3. Critically appraising the evidence
4. Integrating critical appraisal with clinical practice and the patient value
5. Evaluating effectiveness

(Adapted from Straus et al, 2011)



In the interest of providing the best available care to our patients, the current evidence must be incorporated as a clinical guidelines during the **treatment of class II and class III malocclusions** .

### **The Treatment of Class II Malocclusion**

According to Kevin O'Brien and Jonathan Sandler we could outline the evidence base for the treatment of Class II malocclusion with the following (1):

1. The early orthodontic treatment does not reduce treatment time, reduce extractions, and improve skeletal pattern when compared to single - phase treatment in adolescence.
2. While there may be some beneficial effect on a child's self-esteem, there are no significant differences ultimately in self-esteem between those children who have received two phases of treatment and those treated in one phase in adolescence.
3. Two-phase treatment involves more appointments, increased duration of overall treatment with all the associated risks, and increased cost to the patient .
4. When we consider treatment that is provided in adolescence, there appears to be some orthodontic growth modification from the use of a functional appliance, but the majority of the change is dento-alveolar. The use of headgear also provides limited skeletal change, and the greatest effect is dento-alveolar, with distal molar movement of up to 2 mm. On average, this is not sufficient to correct a full - cusp Class II molar relationship.
5. It appears that with all functional appliance treatment, the average failure rate is about 20%. This should be considered when this treatment is offered to a patient, and it should be explained to the parents that only four out of five of these treatments will succeed.
6. Considering patient values, patients prefer fixed functional appliances rather than Twin Block due to problems that may arise from the bulky bite blocks. Furthermore, the cooperation rate with the fixed appliance appears to be greater. Although they are more expensive, and cost should be considered in our decision making .

### **The Treatment of Class III Malocclusion**

**Based on the work conducted by Joseph Ghafari, Ramzi Haddad, and Maria Saadeh The state of evidence regarding Class III malocclusion may be summarized as follows:**

1. Mandibular prognathism is not the prevailing component; maxillary retrognathism is more severely deviant from the norm, therefore , Treatment approaches vary with the diagnosis.
2. Evidence - based practice in Class III malocclusion treatment is age dependent. Orthopedic correction is successful, more in milder skeletal discrepancies, faster in younger children, but unpredictable in the individual patient in terms of outcome and long - term stability.
3. Orthopedic schemes involve mainly a combination of maxillary protraction and mandibular clockwise rotation (except in the presence of open bite). Compliance, overjet overcorrection, and aggressive correction in the first weeks of treatment are important variables that need further investigation, particularly in their interaction with severity of malocclusion.
4. Research is sparse on mesioclusion in the adult; orthognathic surgery is favored with severe skeletal dysplasias.
5. A mesioclusion corrected at an early age may require later treatment during facial development. Early orthopedic correction of maxillary retrognathism maybe overcome by lack of retention of the results (particularly if known etiologies such as respiratory impairment persists) and/or mandibular growth favoring prognathism, though not necessarily macrognathism. Available research has not tackled these specific issues.
6. No evidence exists to demonstrate that orthopedic treatment on average corrects mesioclusion to normoclusion without a level of compensatory inclination of maxillary and/or mandibular incisors.
7. Temporary anchorage devices may facilitate or speed up treatment, but the biological growth characteristics and etiologic elements do not promise drastically different timing or results of treatment.

## **II. Conclusion**

Orthodontists should continue to provide patients with the current best available evidence regarding class II , class III treatment and allow patients to be active participants in making treatment decisions. Future well - designed, high quality studies should be reported in accordance with the CONSORT guidelines may provide greater evidence for the long term effects and stability of class II and class III treatment .

**Reference**

- [1]. Evidence-Based Orthodontics, First Edition, By Greg J. Huang, Stephen Richmond And Katherine W.L. Vig. 1st Ed Wiley-Blackwell 2011; Pp 214. ISBN: 978-0-8138-0614-3.
- [2]. An Introduction To Orthodontics, 3rd Edition By Laura Mitchell. Oxford University Press 2013 4th Edition ISBN: 9780199594719
- [3]. Contemporary Orthodontics, 4th Edition By William R. Proffit, Henry W. Fields, JR And David M. Sarver. Elsevier Sales & Deals 2007; Pp 121.
- [4]. Intercept Orthodontics, 4th Edition By Andrew Richardson. Paperback – 29 Nov 1999
- [5]. Declan Millet, Richard Welbury. Clinical Problem Solving In Orthodontics And Paediatric Dentistry Text And Evolve Ebooks Package, 3rd Edition 2015; E VOLVE. ISBN-13: 978-0702044694
- [6]. Straus, S.E., Glasziou, P., Richardson, W.S., Et Al., 2011. Evidence-Based Medicine, Fourth Ed. Elsevier, Philadelphia. PP231