

## Stability of post-orthodontic dental position, with the use of thermoplastic retainers vs. fixed retainers. A systematic review

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### ADMINISTRATIVE INFORMATION

**Support** - Self-funded.

**Review Stage at time of this submission** - Preliminary searches.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202490110

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 September 2024 and was last updated on 25 September 2024.

### INTRODUCTION

**Review question / Objective** What is the best retainer to maintain post-orthodontic treatment results?

**Rationale** The need for orthodontic treatments is increasing day by day due to the lack of development of dental arches, very large and poorly positioned teeth, which result in varying degrees of dental crowding and, in turn, aesthetic and functional problems. In this situation, treatment with braces is an option to solve these issues. Once the orthodontic treatment is completed, it is important to prevent postoperative instability, meaning to maintain the results obtained after the orthodontic process. However, the position of the teeth tends to relapse, gradually returning to their original state. Retention is possibly the most challenging and unpredictable stage of orthodontic treatment, and the most clinically effective form of retention remains unclear. Retention is typically required after active orthodontic treatment to maintain the teeth in an

ideal aesthetic and functional relationship, as well as to counteract the inherent tendency of the teeth to return to their previous positions. Stability can only be achieved if the forces derived from the periodontium, gingival tissues, orofacial soft tissue, post-treatment occlusion, and facial growth and development are in balance.

**Condition being studied** Post-orthodontic retention is defined as the maintenance of teeth in an optimal aesthetic and functional position after treatment. The changes following treatment present individually and are difficult to predict; some possible causes include natural changes (growth, maturation, or aging). The dental arches shorten with age, leading to crowding. Craniofacial changes, interaction of soft tissues, and function affect the stability of occlusion and change throughout life. The first 12 months post-treatment are the most critical, as this is when the main relapse occurs. Retention is necessary to: Allow for the reorganization of gingival and periodontal tissues. Minimize changes due to growth.

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Allow for neuromuscular adaptation to the corrected position.

## METHODS

**Participant or population** Class I patients.

**Intervention** Removable thermoplastic retainers.

**Comparator** Fixed retainers.

**Study designs to be included** Non-Randomized Clinical Trials and Randomized Clinical Trials.

**Eligibility criteria** Exclusion criteria: systematic reviews, meta-analyses, case reports, studies conducted in Class II and III skeletal patients.

**Information sources** Pub med, Scopus, Web of Science y Science Direct.

**Main outcome(s)** This systematic review seeks to identify the best orthodontic retainer with positive long-term results in skeletal class I patients. Also determine whether thermoplastic retainers are better than or equal to fixed retainers.

**Quality assessment / Risk of bias analysis** The evaluation of the risk of bias of the articles, the tool version 2 was used of the Cochrane risk-of-bias tool for randomized trials (RoB 2).

**Strategy of data synthesis** Spss and excel.

**Subgroup analysis** Chi-squared.

**Sensitivity analysis** Sensitivity will be taken into account through the p value or significance of the articles cited in the research results.

**Language restriction** Neither.

**Country(ies) involved** Ecuador.

**Keywords** dental stability, retainers, orthodontics.

### Contributions of each author

Author 1 - Karina Solano - Information search, data analysis, results. Writing of the systematic review.

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