

Review

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of the dissertation

**Retention phase - assessment of the risk factors for relapse and
prognosis for stability of the orthodontic treatment result**

by Dr. Manoela Mitkova Kalaydzhieva

The dissertation submitted for review contains 204 pages, 426 literature sources, 46 tables, 90 figures and 4 appendices.

Relevance of the problem: Retention of orthodontic treatment results is one of the major problems in orthodontics. Relapse is an unwanted process that is influenced by many factors. Two concepts in the title of the dissertation, "risk factors" and "stability", determine the relevance of the problem for orthodontists.

Literature review: An extremely in-depth literature review has been made - 426 sources. It starts with: ✓ history of the problem and theories of relapse, ✓ factors leading to relapse, ✓ effectiveness of retention, ✓ methods for assessing stability, ✓ predictors of relapse. All this determines the desire of the authors to contribute to the solution of the problem. They have identified more unsolved problems that determine the aim of the dissertation.

The aim is to establish the stability of orthodontic treatment and the reliability of certain types of retention appliances.

To achieve the aim, **5 tasks have been defined.**

Materials: To accomplish the first task a survey among orthodontists and dentists who do orthodontic work has been conducted to find out how they plan the retention phase. The survey has been conducted among the members of the

Bulgarian Orthodontic Society, after defining precise selection criteria for the participants.

To accomplish the second, third and fourth tasks, 70 patients were studied at the beginning of their orthodontic treatment (T_0), after completion of their orthodontic treatment (T_1) and two years following the treatment, i.e over a two-year retention period (T_2) as well as lateral cephalometric radiographs taken at the beginning of the treatment, at the end of the treatment and after the end of the retention period. They are divided into 2 groups: the first group received a Howley retainer and a fixed appliance in the mandible, and the second - a vacuum-formed retainer and a fixed mandibular retainer. The criteria for inclusion and exclusion of patients in the study are indicated. Patients were divided by age, sex, skeletal class and growth type.

Research methodology: The following methods have been used: √ survey method; √ biometric methods for examining the width and length of dental arches. √ as well as Little's Irregularity Index; √ radiographic method for establishing skeletal and dental cephalometric indicators;

The results have been proven by means of modern statistical methods.

Regarding the first task: *"To conduct a survey among practicing orthodontists in Bulgaria on their preferred retention appliances - Howley retainer, vacuum-formed retainer and fixed retainer."* Information has been collected about the retention phase protocol in Bulgaria, as well as the time when the type of retention and the wear times of the retention appliances are chosen.

Regarding the second task: *"To monitor the changes in the dental arch from the beginning of orthodontic treatment to its end and over a 2-year retention period"*. The changes in the biometric parameters of the dental arches in the transverse and sagittal directions as well as the irregularity index in the three time periods were studied.

Regarding the third task: *"To monitor the changes in the inclination of the upper and lower incisors on lateral cephalometric radiographs over the three time periods"*

There is a change in the inclination of the teeth during the treatment period, which is expected, but at the end of the retention period they remain in good position.

Regarding the fourth task: The reliability of the three types of retention appliances has been studied and proven by making comparisons of the changes in biometric parameters for each of them.


Regarding the fifth task: Based on the comparisons of the parameters from the previous three tasks, the authors have determined the predictors of probable relapse.

Conclusions:

There are 8 conclusions that are extremely useful for preventing relapse and using reliable retention methods.

The presented abstract of the dissertation meets the requirements.

Taking into account all of the above, I confidently give my *positive evaluation* of the research presented in the above-reviewed dissertation, abstract, results and contributions, and *propose to the esteemed scientific jury to award the educational and scientific degree "Doctor"* to Dr. Manoela Mitkova Kalaydzhieva in a doctoral program in "Orthodontics".



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