To The Chairman of the Scientific Jury designated by Order No. № 15-01-448#2/22.12.2025. by the Executive director of the "Acibadem City Clinic UMHAT Tokuda"

STATEMENT

By Assoc. Prof. Iliyana Hristova Petrova-Stoyanova, MD, PhD
Head of the Department of Cardiology at the Cardiology Clinic,
MHAT "National Heart Hospital" - EAD
Member of the scientific jury for awarding the scientific and educational degree "Philosophy doctor", determined by order of the Executive Director of "ACHIBADEM CITY CLINIC TOKUDA HOSPITAL" EAD No. 15-01-448#2/22.12.2025

Subject: dissertation of **Dr. Krasimir Rosenov Dzinsov, MD**, PhD doctoral student of independent training in the Doctoral Program "Cardiology" on theme
"IMPACT OF RADIO FREQUENCY LESION CHARACTERISTICS AND TAGGING DURING PULMONARY VEIN ISOLATION IN PATIENTS WITH ATRIAL FIBRILLATION"
Scientific supervisor - Prof. Dr. Vasil Borislavov Traykov, PhD

For the competition, Dr. Krasimir Rosenov Dzinsov has submitted all the necessary documents - dissertation, abstract and additional documents, in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the Development of the Academic Staff of "Acibadem City Clinic UMHAT Tokuda" EAD.

As a member of the scientific jury, I declare that:

- ✓ I have no conflict of interest with the candidate;
- ✓ All submitted materials are precisely arranged and described;
- ✓ There are no mistakes in the submitted documentation;
- ✓ There is no evidence of plagiarism in the dissertation.

Significance of the topic

Atrial fibrillation (AF) is among the most common cardiac arrhythmias in the modern world, which is associated with an increased risk of cardiovascular and all-cause mortality, an increased frequency of thromboembolic events, worsening clinical symptoms and functional capacity, and an increased frequency of hospitalizations. Despite the known drug methods for the treatment/control of AF, in recent years radiofrequency catheter ablation has become the main

preferred method for controlling heart rhythm due to its higher effectiveness. At the same time, a number of technical characteristics related to the procedure can affect its outcome, short-term and long-term success rate. The most common cause of AF recurrence after successful radiofrequency ablation (RFA) is the restoration of conduction at certain locations in the ablation lines, which are defined as gaps. The development and validation of technological algorithms including parameters such as ablation time, power, energy and impedance drop could allow for relatively accurate prediction of the quality of lesions that are formed during the interventional radiofrequency procedure, as well as timely detection of gaps. Real-time analysis of these parameters will allow for the achievement of continuous ablation lines and improvement of RFA results, as well as a significant reduction in the recurrence of rhythm disorders. In the literature, the systematic approach in this direction needs to be developed and supplemented with data from Bulgarian clinical practice.

Structure of the dissertation

The scientific work of Dr. Krasimir Dzinsov is structured on 195 pages according to the requirements and contains a literature review, aims, tasks, materials and methods, results, discussion, methodological considerations and limitations, conclusions, bibliography, contributions. The dissertation material is illustrated with 44 figures and 28 tables. The bibliography includes 336 literary sources, of which 9 are by Bulgarian authors and 327 by foreign authors.

The literature review on the topic of the dissertation is presented on 40 pages and fully and comprehensively reflects the relevance of the presented issues. The significance of atrial fibrillation; the main risk factors and concomitant diseases that lead to its manifestation; the main treatment methods, with the advantages and disadvantages of each of them, are summarized, but very clearly summarized. An in-depth analysis is presented on the influence of a number of technical parameters during RFA (*impedance monitoring, determining the pressure force of the catheter, improving the stability of the ablation catheter, determining the gaps in the ablation line*) on the immediate and long-term result of the procedure.

Dr. Krasimir Dzinsov sets **the aim** of his research work to study the procedural characteristics and success rate in patients with AF treated with catheter ablation, in which manual or automatic marking of the lesions indicated for intervention was used. The main relationship between the marking method and the long-term outcome – absence of AF recurrences and change in quality of life is sought. The goals of the dissertation include the study of the objectively measured characteristics of radiofrequency applications, and the search for their relationship with the long-term absence of recurrence and the change in the quality of life of patients.

To achieve the goals, the doctoral candidate sets the following tasks:

1. To analyze the clinical and procedural characteristics of a cohort of patients with AF treated with catheter ablation, in terms of general demographic, clinical and procedural characteristics, procedural success rate and complication rate;
2. To compare some clinical and procedural characteristics, as well as the procedural success rate in patients treated with catheter ablation depending on the method of marking the ablation lesions (automatic and manual marking);
3. To determine the significance of the gaps in the ablation lines, established with the two methods of marking the lesions, for the acute (acute restoration of conduction)

and long-term outcome of the procedure in the first procedure and in repeated ablation;

4. To characterize the ablation lesions based on the radiofrequency application data from the electroanatomical mapping system and to determine their impact on the success of the procedure;
5. To assess the impact of catheter ablation, the method of marking the lesions and their objective characteristics on the quality of life of the patients.

Methodological approach:

The data of 131 patients meeting certain inclusion criteria and undergoing radiofrequency ablation in three clinical centers were analyzed. All patients were divided into two groups: group 1 – the operator used manually placed markers to mark the radiofrequency applications (n=48); group 2 – the operator used automatically placed markers in the electroanatomical mapping system to mark the radiofrequency applications (n=83). The preparation of the patients, all the procedural characteristics of radiofrequency ablation and the corresponding applications are presented in detail and comprehensively. Of essential importance for the research methodology is the complete follow-up of the included patients and assessment of their quality of life – at baseline and at the end of the research period.

The statistical analysis performed on the collected data is adequate and includes all the necessary statistical methods that are necessary to verify the scientific hypothesis and set goals.

Results:

The results obtained by Dr. K. Dzhinsov are detailed on 56 pages of the dissertation with very clear illustrations from the relevant tables and figures, successfully incorporated into the text. The basic clinical characteristics of the patients, the technical parameters of the ablation lesions during RFA, as well as the results of the follow-up with a main focus on AF recurrences and quality of life are described in detail. All clinical, instrumental and electrophysiological characteristics that may be associated with the registration of recurrences of the rhythm pathology, respectively procedural failure from RFA, are analyzed in extreme detail.

Conclusions: As a result of a thorough analysis of the results obtained, the author concludes that automatic marking in RFA is associated with a multiple of radiofrequency and total procedural time compared to manual marking using the same methodology. Automatic marking allows for the detection of more gaps in the ablation lines, which allows for better identification of potential risks for arrhythmia recurrence. Automatic marking provides an opportunity for standardization of the ablation procedure by using objective biophysical parameters, which reduces operator dependence and improves the repeatability of the results.

Contributions: There are 6 contributions, divided into two groups - theoretical-methodological (3) and of a scientific-applied nature (3).

Publications: On focus of the dissertation, the author presents 3 full-text publications (in all of which he is the first author) and 6 participations in scientific forums - international and national congresses in Bulgaria (in all of which he is the first author).

The abstract contains 75 pages and summarized the whole text which is written in the dissertation. It has been passed according to the requirements.

According to the minimum requirements of NACID for awarding the educational and scientific degree "Philosophy doctor", Dr. Krasimir Dzinsov fully meets the criteria for the required number of points.

Conclusion:

I evaluate the dissertation work of Dr. Krassimir Rosenov Dzinsov on the topic "**IMPACT OF RADIO FREQUENCY LESION CHARACTERISTICS AND TAGGING DURING PULMONARY VEIN ISOLATION IN PATIENTS WITH ATRIAL FIBRILLATION**" as extremely interesting in scientific terms, with the possibility of application in real clinical practice and creation of useful algorithms in interventional electrophysiology. The presentation of data from real clinical practice in Bulgaria invariably increases the scientific contribution of the presented work and turns it into a valuable tool for future innovations in the field of electrophysiology.

Based on the detailed analysis of the scientific work of Dr. K. Jinsov, I believe that the **dissertation work fully meets the requirements for awarding the educational and scientific degree "Philosophy doctor ",** which are enshrined in the Act on the Development of the Academic Staff in the Republic of Bulgaria and in the Regulations for the Development of the Academic Staff of "Acibadem City Clinic UMBAL Tokuda" EAD.

In conclusion, **I give my "positive" vote** and recommend that the members of the esteemed Scientific Jury **vote positively** for awarding Dr. Krasimir Rosenov Dzinsov the educational and scientific degree **"Philosophy doctor"** in the scientific specialty **"Cardiology"**, professional field 7.1 Medicine, field of higher education 7 Health and Sports.

05.01. 2026 г.

(Assoc.Prof. Iliyana Petrova, MD, PhD)