

## **REVIEW**

By Corr. Member Prof. Dr. Assen Rachev Goudev, D.Sc.  
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Regarding: Competition for the academic position of "Professor" in the field of higher education 7. Healthcare and Sports, professional direction 7.1 Medicine, scientific specialty "Cardiology", for the needs of the Cardiology Clinic at "Acibadem City Clinic University Hospital Tokuda" EAD, announced in State Gazette No. 54/04.07.2025.

By Order No. 15-03-215/03.09.2025 of the Executive Director and the Procurator of "Acibadem City Clinic University Hospital Tokuda" EAD, I was appointed as an external member of the Scientific Jury. At the first virtual meeting, I was assigned to prepare this review. The review was prepared in accordance with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), its implementing regulations, and the internal rules of "Acibadem City Clinic University Hospital Tokuda" EAD. The procedure is in compliance with the regulatory framework.

Only one candidate applied for participation in the competition – Assoc. Prof. Dr. Vassil Borislavov Traykov, PhD.

I declare that I have no conflict of interest and have found no evidence of plagiarism.

### **1. Professional data of the candidate**

Dr. Vassil Traykov was born in 1975. He graduated in Medicine from the Medical University of Sofia in 2000. In 2010, he was board certified in Cardiology at the Faculty of Medicine, University of Szeged, Hungary. He holds multiple European certifications including Interventional Electrophysiology (EHRA 2011), Cardiac Pacing (MU-Sofia 2013), Invasive Electrophysiology (MU-Sofia 2014), and the Diploma of Advanced Studies in Cardiac Arrhythmia Management (2023). He also holds a Master's degree in Health Management from MU-Sofia (2016). In 2021, he defended his PhD on 'Catheter Ablation for Atrial Fibrillation: Procedural Characteristics and the Role of Triggering Structures in the Fibrillatory Process'. He has served as Head of the Department of Invasive Electrophysiology at Acibadem City Clinic University Hospital Tokuda since 2013 and as Associate Professor of Cardiology since 2021.

The candidate has worked successively as a physician at the Cardiology Clinic of the National Cardiology Hospital, Sofia (2002–2014), and between 2004 and 2008 he served as a Research Associate, 3rd degree, in the Laboratory of Electrophysiology. He was Head of the Department of Invasive Electrophysiology at the Cardiology Clinic of

Tokuda Hospital from March 2011 to November 2012, and subsequently (from November 2012 to April 2013) at Acibadem City Clinic Cardiovascular Center – Sofia. Since April 2013, he has been Head of the Department of Invasive Electrophysiology at the Cardiology Clinic of “Acibadem City Clinic University Hospital Tokuda” EAD.

Assoc. Prof. Traykov has been a part-time lecturer in the Department of “Internal Medicine, Pharmacology and Clinical Pharmacology, Pediatrics, Epidemiology, Infectious and Skin Diseases” at the Faculty of Medicine, Sofia University “St. Kliment Ohridski” since the 2019/2020 academic year, teaching medical students in both Bulgarian and English. Since 2021, he has held the position of Associate Professor of Cardiology at the Cardiology Clinic of “Acibadem City Clinic University Hospital Tokuda” EAD.

He has completed numerous specializations in electrophysiology and cardiac pacing in Belgium, France, Italy and the Czech Republic.

## **2. Evaluation of quantitative and qualitative indicators**

Assoc. Prof. Traykov participates in the competition with a total of 87 scientific works, 86 of which were produced after assuming the academic position of Associate Professor: one doctoral dissertation for the degree of “Doctor,” 39 scientific publications, and 47 scientific reports (Table I), listed under items No. 9 and No. 10 among the mandatory application documents for the competition.

A total of 37 scientific articles have been published in peer-reviewed and indexed journals included in the Scopus and Web of Science databases, of which 26 are international papers with impact factor, some appearing in the most authoritative journals in the field of cardiology and electrophysiology, such as European Heart Journal, Europace, BMJ Open, Clinical Cardiology, Journal of Arrhythmia, Frontiers in Cardiovascular Medicine, and others. Assoc. Prof. Traykov is a member of taskforce preparing the most recent edition of the European Guidelines for the Management of Atrial Fibrillation. In Bulgarian journals indexed in Scopus or Web of Science, 11 articles have been published. He is sole, first, or last author in almost half (49%) of his publications, and second author in 2.5%. Regardless of his position in the author list, he actively contributes to conducting the studies, data analysis, and manuscript preparation. His scientific activity also includes 47 participations in scientific forums as participant, organizer, or presenter of oral communications and posters — 28 international and 19 national. In 45 (96%) of these, he is the sole or first author.

According to the official citation report issued by the Central Medical Library of MŪ-Sofia (Ref. No. 542/05.08.2025), there are 9,530 citations documented in total — 4,757 in Scopus, 4,739 in Web of Science, and 34 in Bulgarian sources from the Library’s catalog.

The total impact factor (IF) amounts to 272.54, of which 187.98 corresponds to publications from the period September 2021 – September 2025, i.e., after obtaining the title of Associate Professor. According to Scopus (as of September 2025), his H-index is 21.

Assoc. Prof. V. Traykov is a regular reviewer for leading journals such as *Europace*, *Heart Rhythm*, *JACC: Clinical Electrophysiology*, and others. He currently serves as Associate Editor for *Frontiers in Cardiovascular Medicine*.

The number and quality of the scientific works presented by Assoc. Prof. V. Traykov are fully sufficient and highly competitive for participation in this professorship competition.

### **3. Main scientific contributions**

The scientific work of Assoc. Prof. Traykov is focused on issues related to electrophysiology and cardiac pacing, as well as on the prevention of cardiovascular diseases. It is of original character and high value. The studies demonstrate proven scientific-theoretical and scientific-applied contributions.

The main areas of focus are:

#### **I. Atrial fibrillation mechanisms and catheter ablation as a therapeutic modality**

The scientific publications in the field of atrial fibrillation are a continuation of the author's previous scientific interests. The mechanisms of occurrence and maintenance of atrial fibrillation (AF) are examined, with a focus on studying the role of structures exhibiting trigger activity in maintaining the process of AF, as well as studying the indications, techniques, procedural characteristics, and complications of catheter ablation of AF (1, 6, 7, 12, 13, 17, 27, 33).

##### *Contributions of scientific-theoretical nature*

The role of the trigger structures in maintaining the fibrillatory process has been clarified – through the methods of frequency analysis, the frequency distribution in the atria under conditions of induced episodes of arrhythmia in patients with paroxysmal atrial fibrillation has been studied, demonstrating good temporal stability of the frequency distribution in the atria and showing the role of the pulmonary veins in maintaining the process of AF (1).

##### *Contributions of scientific-applied nature*

Results have been established regarding procedural characteristics, procedural success, and complication rates in groups of patients with AF who underwent catheter ablation (1). Factors determining procedural success during patient follow-up have also been

identified, as a new, previously unreported predictive factor has been identified – the HAS-BLED score (1).

Evidence has been presented for the advantage of the use of general anesthesia in reducing procedural time, radiation dose, fluoroscopy time, number of radiofrequency applications, and cumulative radiofrequency duration (1).

The preferences of a large group of cardiologists from various subspecialties regarding the types of digital devices used for decision-making in patients with atrial fibrillation have been studied (5, 8). The results show a pronounced heterogeneity in the approach across different clinical scenarios, with a clear trend emerging toward wider implementation in practice of digital devices allowing intermittent ECG monitoring, as well as a growing need for additional training of medical professionals regarding the capabilities of digital portable devices.

Sex differences in embolic risk in AF have also been studied, and within a large population-based cohort study including 78,852 patients, no sex-related difference was found regarding the above-mentioned events (12). The clinical scores CHA<sub>2</sub>DS<sub>2</sub>-VASc and CHA<sub>2</sub>DS<sub>2</sub>-VA (excluding sex) were compared, demonstrating that both scores have low predictive value for a combined endpoint (overall mortality, ischemic stroke, and systemic embolism), but CHA<sub>2</sub>DS<sub>2</sub>-VA provides a significantly higher area under the ROC curve (0.651 versus 0.639,  $P < 0.05$ ). These data represent one of the bases for the change in the published AF management guidelines (13) and the elimination of sex as a predictor of embolic events.

The first national results regarding the quality of life of patients with atrial fibrillation after catheter ablation have been reported (33). The results show significant improvement in all domains of quality of life after catheter ablation, assessed using the EQ-5D-5L questionnaire.

In a multicenter international registry including 873 patients, differences in activated clotting time (ACT) values and doses of administered unfractionated heparin during pulmonary vein isolation procedures were investigated (27). It was found that patients receiving dabigatran and vitamin K antagonists periprocedurally have higher ACT values and lower heparin requirements during the procedure compared to patients treated with apixaban and rivaroxaban.

A case has been reported of long-standing persistent AF in a patient with rheumatic valvular disease after mitral valve surgery, in whom isolation of the posterior wall of the left atrium was achieved, with persistent fibrillatory activity in it despite normal sinus rhythm in the remaining atrial tissue (17).

The author participates in the group developing the contemporary AF management guidelines from 2024 (6, 7, 13). This important document examines the main principles of management regarding patients with AF. Of particular interest is the proposed new algorithm AF-CARE, imposing an integrated approach to AF. This represents a contribution of significant scientific-applied character.

## **II. Catheter ablation in supraventricular tachycardias, atrial flutter, and vasovagal syncope.**

The scientific publications in this section include studies on the approach to catheter ablation without or with minimal use of fluoroscopy in patients with supraventricular tachycardias and atrial flutter (9, 18, 31, 32). Approaches to catheter ablation in patients with corrected congenital heart malformations are also described.

As an entirely new approach, cardioneuroablation is also considered as a method for treating vasovagal syncope (16). This method is aimed at ablation of autonomic ganglia located in the fat pads around the heart. Elimination of part of the parasympathetic neurons located in these fat pads is associated with a change in the sympathovagal balance and improvement in patients with cardioinhibitory vasovagal syncope and certain functional bradycardias. The published data on the subject show a significant reduction in the frequency of syncope and a significant improvement in quality of life in patients after cardioneuroablation.

### *Contributions of original character*

Data are presented from an international multicenter study (9, 18) examining the performance of catheter ablation with minimal use of fluoroscopy in 680 patients with supraventricular tachycardias and atrial flutter. The results show that in 90% of the examined patients the procedure was performed without the use of fluoroscopy, with a high success rate and a very low complication rate (0.4%). The first series of patients in the country is also presented, in which catheter ablation for supraventricular tachycardias and atrial flutter was performed with zero or minimal fluoroscopy (32).

For the first time in the country, a clinical case is presented of ablation of macroreentrant atrial tachycardia after corrected complex congenital heart malformation – cavopulmonary anastomosis with extracardiac conduit, requiring access to the cardiac chambers through transconduit puncture (31).

### *Contributions of applied and confirmatory character*

A review on the topic of cardioneuroablation in the treatment of vasovagal syncope is presented (16). The main pathophysiological mechanisms influenced by cardioneuroablation are discussed. Data are also presented regarding the different methods and approaches for performing the procedure, and the mechanistic features

behind each are indicated. The published results of the procedure regarding the influence on the frequency of syncope and quality of life are described.

### **III. Cardiac pacing and infections in implantable electronic devices for heart rhythm management.**

The scientific works in this section are aimed at presenting original data in the field of cardiac pacing, particularly in the area of physiological pacing. Also, continuing the author's previous work on infections related to implantable devices, the most recent trends in their prevention and treatment are presented (23, 24, 26, 34, 35, 40).

#### *Contributions of original character*

Data are presented regarding the effect of right ventricular apical pacing on right or left ventricular function, evaluated by conventional and speckle-tracking echocardiography (24). The results show significant deterioration in echocardiographic parameters in patients with a high percentage of right ventricular pacing.

#### *Contributions of applied and confirmatory character*

The author presents publications of two clinical cases of physiological pacing (34, 35). The first discusses His bundle pacing in a patient with impaired AV conduction under conditions of persistent atrial flutter after hybrid coronary revascularization and left atrial appendage closure. The second case represents the first description in the country of performing left bundle branch area pacing under intracardiac echocardiography guidance. The benefits and potential challenges of using this imaging technique in physiological pacing are described. In connection with this concept of implantation monitoring, the author has initiated a single-center study evaluating the electrical parameters of the lead at different depths in the interventricular septum, with implantation monitored by intracardiac echocardiography for precise visualization of the progression of the lead tip in the septum in real time during the procedure (scientific communication No. 46).

Two review publications present the epidemiology, mechanisms, and methods of prevention of infections of implantable electronic devices (23), as well as the role of antibacterial envelopes for infection prevention in these devices regarding mechanism of action, efficacy, and cost-effectiveness (26).

In a chapter from a collective monograph, the author describes the changes occurring in the conduction system with aging and provides guidance on the specifics of device implantation in these patients, which represents an important contribution to everyday clinical practice (40).

#### **IV. Treatment of ventricular tachyarrhythmias and prevention of sudden cardiac death.**

This section includes scientific publications in the field of ventricular tachyarrhythmias both in structurally normal hearts and in structural heart disease (19, 20, 25).

##### *Contributions of original character*

A series of patients with ventricular ectopy originating from the inferoseptal process of the left ventricle is presented (19). To achieve successful catheter ablation, an endocardial approach through the left ventricle and an epicardial approach through the right atrium, as well as through branches of the coronary sinus, were used.

Data are reported from a meta-analysis examining early catheter ablation in patients with structural heart disease and an implanted cardioverter-defibrillator (25).

##### *Contributions of scientific-applied value*

The significance of fever-induced ECG changes in asymptomatic patients with Brugada syndrome as a risk factor for malignant ventricular arrhythmias is discussed within an editorial article (20). In light of the results commented on in the original publication, the editorial provides clear guidance for risk stratification in these patients, which represents a contribution of scientific-applied value.

#### **V. Development of guidelines, consensus documents, and position papers of leading organizations.**

This section includes scientific publications representing consensus documents addressing important aspects of clinical cardiology and electrophysiology not covered in sufficient detail by existing guidelines (10, 11, 14, 22).

##### *Contributions of clinical-applied character*

The author participates in the creation of a consensus document of the European Heart Rhythm Association and the European Association of Cardiovascular Imaging on periprocedural imaging in electrophysiology (14). This document has high scientific-applied value as it provides algorithms for management in numerous scenarios not sufficiently detailed in existing guidelines.

A document is also presented that discusses in detail the different methods for selecting patients for mass screening for atrial fibrillation (22). This position paper of the European Heart Rhythm Association discusses the topic of optimal monitoring intervals and evaluates practical methods for detecting atrial fibrillation across various clinical scenarios. Specific recommendations for management are proposed, which determine the high practical value of this publication.

Two consecutive publications present an international consensus on the management of Takotsubo syndrome (10, 11). The approaches to diagnosis and treatment of this condition are discussed in detail, with clear recommendations for risk stratification both in general and in specific patient subgroups.

#### **VI. National and international registries in the field of arrhythmias.**

This section includes publications from national and international registries and databases regarding the organization of care for patients with rhythm and conduction disorders (3, 30, 31, 36–38).

##### *Contributions of original character*

For the first time in great detail, up-to-date data have been presented regarding the organization and delivery of care for patients with cardiac arrhythmias in the ESC member countries (3). These are the result of the ESC Atlas initiative and include information on 98 different characteristics, providing a comprehensive overview of patients' access to guideline-recommended diagnostic and therapeutic options.

Data are presented from two national electronic registries – Bg-Pace and Bg-Ephy – for different time periods (30, 31, 36–38), clearly outlining trends in electrophysiology and cardiac pacing in the country.

#### **VII. Prevention of cardiovascular diseases and promotion of cardiovascular health.**

During his term as President of the Bulgarian Society of Cardiology (2022–2024), the author actively worked on the topic of cardiovascular health promotion and the creation of a National Cardiovascular Health Plan. This section reflects the author's publications on cardiovascular health and prevention of cardiovascular diseases (28, 15).

##### *Contributions of original character*

Results are presented from a survey among 585 cardiologists, which includes three groups of questions: professional information; information on circumstances under which cardiologists consider testing for Lp(a); and questions regarding the reasons for the limited recommendation of the test (28).

##### *Contributions of applied character*

A review is presented on the role of coordinated and unified efforts of all EU member states for the adoption of a European Cardiovascular Health Plan and the subsequent development and adoption of National Plans (15).



### **VIII. Miscellaneous**

A review summarizing the main topics discussed at the 2024 meeting of the European Heart Rhythm Association leadership with the chairpersons of National Societies and Working Groups in Electrophysiology is presented, dedicated to the digital transformation of electrophysiology (2). The main advantages and challenges of remote monitoring of implantable electronic devices, the use of mobile devices in electrophysiology, and the widespread adoption of artificial intelligence are discussed in detail. Focus is also placed on the development of the European Health Data Space – an initiative actively pursued by the EU, expected to become a standard for the easy exchange of medical data between member states.

In connection with the 50th anniversary of the Bulgarian Society of Cardiology, the history of the Society, its scientific and educational activities are described, and brief information about the XVIII National Congress of Cardiology (2024) is provided (4).

National data on the use of fluoroscopy in electrophysiological procedures are presented (21). Based on these data, for the first time in Bulgaria, reference levels have been developed, providing a foundation for future comparisons and standardization.

The author participates as a co-author of a cardiology textbook, contributing a chapter dedicated to the fundamental principles of electrophysiological study and catheter ablation (39).

The works of Assoc. Prof. Traykov have proven scientific and scientific-applied contributions and contribute to the implementation of catheter ablation as a therapeutic approach in supraventricular tachycardias, atrial flutter, and vasovagal syncope, as well as catheter ablation and implantation of various types of pacemakers and management of their complications.

### **4. Teaching activity**

Certificate No. 19-490/17.07.2025, issued by the Educational Department of “Acibadem City Clinic University Hospital Tokuda” EAD, certifies a total teaching workload for the period from 01.01.2020 to 31.12.2024 amounting to 2817 equivalent hours, including: training of cardiology residents – 714 equivalent hours, training in CPD (continuing professional development) – 441 equivalent hours, modules conducted with external trainees – 1312 equivalent hours, and continuing education – 90 equivalent hours.

An official note from the Faculty of Medicine at Sofia University “St. Kliment Ohridski” certifies the teaching workload as a part-time lecturer for the academic years from 2021/2022 to 2024/2025 inclusive, totaling 975 teaching hours.

The teaching workload of Assoc. Prof. Vassil Traykov for the period 01.01.2020 – 31.12.2024 is excellently presented.

Assoc. Prof. Traykov conducts practical training with medical students in Bulgarian – 3rd year (“Propaedeutics of Internal Medicine” – Cardiology), with 4th-year students and medical interns in the discipline Internal Medicine (Cardiology) in both Bulgarian and English at the Faculty of Medicine, Sofia University “St. Kliment Ohridski.”

Assoc. Prof. Traykov is the supervisor of two cardiology residents. He has conducted training for 72 external cardiology residents in the modules “Electrophysiological Study and Treatment” and “Cardiac Pacing.”

He trained 7 physicians in CPD programs on “Electrophysiological Study” – basic and expert level, and “Cardiac Pacing” – basic level.

He is also the scientific supervisor of one PhD student.

He actively participates in cardiology scientific forums with review and research presentations.

## **5. Clinical and diagnostic activity**

The clinical and diagnostic activity of Assoc. Prof. V. Traykov includes primarily the diagnosis and treatment of rhythm and conduction disorders. He devotes special attention to studying the mechanisms of atrial fibrillation, the application of catheter ablation as a therapeutic approach in supraventricular tachycardias, atrial flutter, and vasovagal syncope, as well as catheter ablation in general. Another area of focus is cardiac pacing, the significant clinical problem of infections related to implantable electronic devices for heart rhythm management, as well as the treatment of ventricular tachyarrhythmias and the prevention of sudden cardiac death. He also has a strong interest in the prevention of cardiovascular diseases and the promotion of cardiovascular health.

He performs the full range of complex electrophysiological procedures and implantations of various types of cardiac pacemakers.

He actively participates in consultative activities in electrophysiology and cardiac pacing as Head of the Department of Electrophysiology and Cardiac Pacing.

## **6. Expert and organizational activity**

Assoc. Prof. V. Traykov is a member of numerous national and international scientific societies and organizations, holding leadership positions in several of them — a

convincing testament to the high professional reputation he enjoys both in Bulgaria and abroad.

He is a member of the Bulgarian Society of Cardiology (BSC). During his term as President of the Bulgarian Society of Cardiology (2022–2024), he actively worked on the promotion of cardiovascular health and the creation of a National Plan for Cardiovascular Health.

He is also a member of the European Society of Cardiology (ESC) and the Bulgarian Association of Cardiac Pacing and Electrophysiology, where he served as Chairman for two consecutive terms (2016–2019 and 2019–2022).

From 2016 to 2022, he was a Member of the Scientific Documents Committee of the European Heart Rhythm Association (EHRA).

From October 2022 to October 2024, he served as Co-Chair of the EHRA Selection Committee. Since September 2024, he has been a Member of the ESC Declaration of Interest Committee.

He also acts as an external expert to several national institutions, such as the Ministry of Health (MoH) and the National Health Insurance Fund (NHIF).

## 7. Comparative evaluation

The table compares the quantitative criteria — the minimum national required points according to the requirements for the scientific and teaching activity of candidates for the academic position of “Professor” in the field of higher education 7. Healthcare and Sports, professional field 7.1 Medicine, in the scientific specialty “Cardiology”, for the needs of the Cardiology Clinic at “Acibadem City Clinic University Hospital Tokuda” EAD, and the points presented by the candidate.

Group of indicators    Content    Minimum required points (NACID) for “Professor”  
Points presented by Assoc. Prof. V. Traykov, PhD

| Group of indicators | Content          | Minimum required points (NACID) for “Professor” | Points presented by Assoc. Prof. V. Traykov, PhD |
|---------------------|------------------|---|--|
| A                   | Indicator 1      | 50  | 50   |
| B                   | Indicator 2      | -   | -  |
| C                   | Indicator 3 or 4 | 100   | 129,31   |

|                               |                                   |            |                     |
|-------------------------------|-----------------------------------|------------|---------------------|
| <b>D</b>                      | Sum of indicators 5 to 9          | 200        | 281,82              |
| <b>E</b>                      | Sum of indicators 10 to 12        | 100        | 142 610             |
| <b>F</b>                      | Sum of indicators 13 till the end | 100        | 220                 |
| <b>Total number of points</b> |                                   | <b>550</b> | <b>143 291.13 T</b> |

*The comparative assessment based on the indicators, in accordance with the regulatory requirements for scientific and teaching activity for holding the academic position of "Professor", demonstrates that Assoc. Prof. V. Traykov fully meets and substantially exceeds all criteria. With 550 points required, he has presented 143,291.13 points.*

### **CONCLUSION**

Assoc. Prof. Dr. Vassil Traykov, PhD, presents materials that fully comply with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), its Implementing Regulations, and the Regulations of "Acibadem City Clinic University Hospital Tokuda" EAD for holding the academic position of "Professor."

Assoc. Prof. V. Traykov is a distinguished physician with extensive clinical, scientific, teaching, and administrative experience. I highly value his theoretical and practical contributions to the development of cardiology and electrophysiology, as well as the high level of his scientific output.

**In conclusion, based on the presented scientific indicators and the overall scientific, teaching, and public activity, I strongly recommend to the esteemed members of the Scientific Jury to vote in favor of the election of Assoc. Prof. Dr. Vassil Borislavov Traykov, PhD, to the academic position of "Professor" in the scientific specialty "Cardiology", for the needs of the Cardiology Clinic at "Acibadem City Clinic University Hospital Tokuda" EAD.**

Sofia, October 10, 2025

Prepared by:

(Corr. Member Prof. Dr. Assen Goudev, D.Sc.)

