

OPINION

by Prof. Albena Vladimirova Alexandrova, Ph.D., National Sports Academy "Vasil Levski", Department of "Physiology and Biochemistry"

Regarding the candidacy of Assistant Professor Ivan Mirchev Ivanov, Ph.D., for participation in a competition for the academic position "Associate Professor" in the Professional field 7.6. Sport, specialty "Biomechanics" for the needs of the Department of "Anatomy and Biomechanics" at the National Sports Academy "Vasil Levski", published in the State Gazette, no. 93 of 22 November 2022, p. 63 and according to the order of the Rector of the National Sports Academy ZP-1308/14.12.2022

1. General overview of the submitted documentation

In the competition for the academic position "Associate Professor", announced for the needs of the Department of "Anatomy and Biomechanics" of the "Vasil Levski" National Sports Academy, within the statutory deadline, only one candidate submitted documents - Assistant Professor Ivan Mirchev Ivanov, Ph.D. The submitted documents and a set of materials for the competition have been prepared in accordance with the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its application, and the Regulations for the development of the academic staff of the "Vasil Levski" National Sports Academy and meet the criteria for occupying the academic position of "Associate Professor".

2. Career development of the candidate

The candidate, Ivan Ivanov, graduated in 2002 with a master's degree in "Engineering Physics" with a professional qualification as an engineer-physicist and a specialization in "Medical Physics" at the Faculty of Physics of the Sofia University "St. Kliment Ohridski". In 2008, at the Institute of Mechanics at the Bulgarian Academy of Sciences, Ivanov defended his Ph.D. thesis on "Rheological and electrical properties of blood and their modeling" and received the educational and scientific degree "Philosophy Doctor" in the scientific specialty 01.02.07 "Biomechanics". From 2006 until now, with a break (2009), Ivan Ivanov worked at the Institute of Mechanics - BAS as a physicist. In 2014, he was appointed to the Department of Anatomy and Biomechanics of "Vasil Levski" National Academy of Sciences as an Assistant professor.

3. Evaluation of the candidate's educational and teaching activities

Ivanov has a teaching experience since 2014 in the Department of Anatomy and Biomechanics, where he conducts practical classes for undergraduate students from the National Sports Academy. He was the supervisor of a successfully defended bachelor diploma thesis on the topic: "Kinematic analysis of the technical features in the development of jumps in women's figure skating" of Ruseliana Clark.

4. Characteristics of the candidate's scientific activity

In the current competition assistant professor Ivan Ivanov participated with 26 publications, of which 13 were published in scientific journals, referenced and indexed in world-famous databases with scientific information (group G, item 7 - a total of 180.5 items), and the remaining 13, respectively, in non-refereed journals with a scientific review (group D, item 8 - total 200.5 items). According to the submitted List of citations, the candidate's scientific works have been cited 62 times (groups D 10, 11, and 12 - a total of 535 items), with 23 of them being cited in publications printed in journals referenced in Scopus and Web of Science (group D 10 - 345 items); The h-index of Ivanov is 10 (according to Scopus). The presented scientometric indicators of Associate Professor Ivanov fully cover and even exceed the minimum national requirements and the requirements according to the Regulations for the Development of the Academic Staff of the National Sports Academy for the academic position "Associate Professor".

The scientific interests of Associate Professor Ivanov are mainly in the field of hemorheology and sports biomechanics. The main researches and publications of Ivan Ivanov are related to the study of the relationship between the mechanical and electrical characteristics of blood (Dissertation and Articles 1, 2, 3, 4, and 5), the study of the effects of sodium nitrite (NaNO_2 , E250) (Articles 6, 7, 8 and 26), cadmium acetate ($\text{Cd}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}$) (Article 23), cobalt chloride (CoCl_2) (Article 25), poly(acrylic acid) based nanoparticles (Articles 11 and 12), as well as diabetes (Articles 18, 19 and 22) on the hemorheological properties of blood. Another narrower scientific field in which the candidate actively works is sports science and practice. His scientific research established the effects of physical loads of different frequencies, intensity, and duration on the hemorheological response in athletes (monograph), the relationship between the balance stability of air pistol shooting competitors and the achieved shooting results (Articles 13 and 14), the changes in the joints in isometric stretching (Articles 15, 16 and 17), the relationship between kinematic and anthropometric parameters and the effectiveness of selected fighting techniques in Shotokan karate competitors (Article 20).

5. Evaluation of research contributions

The review of the candidate's scientific output shows that the results of the conducted research represent certain contributions in the scientific areas in which he works. In general, I accept his evaluations of the scientific contributions of the publications with which he participated in the competition.

The main contributions that I rate as significant and original are:

A proven statistically significant relationship between the change in the rheological and electrical properties of blood and blood coagulum;

Proven dependence of the relationship between the change of rheological and electrical properties of blood and blood coagulates on the rate of deformation, temperature, and concentration of additives (nanoparticles, dextran, and polyethylene glycol) in the blood sample.

Proven ability to evaluate and characterize kinetic coagulation parameters by measuring specific electrical conductivity over time.

Proven objectivity of hemorrhagic parameters (whole blood viscosity and plasma viscosity) and of basic hematometric indices (Hb, HCT, MCV, MCHC) as quantitative biomarkers for monitoring nitrite intoxication in medical toxicology.

An algorithm was created for the calibration of an experimental system for determining the specific electrical conductivity of blood with a derived analytical equation for calculating the real values of the specific electrical conductivity of a tested sample.

Introduced a new quantitative criterion for sight stability in air gun shooting based on a proven direct relationship between balance stability and performance in air gun shooters.

Structuring the different nature and degree of changes in the biomechanical and fluid properties of blood and blood cells during physical loads of different frequency, intensity, and duration.

Developed an experimental model to study the influence of isometric stretching on the spatial characteristics of the knee joint.

6. Project activity

It is clear from the provided documentation that Associate Professor Ivanov participated in seven projects: six research projects and one educational project. Two of the scientific projects were international: 1) "Comparative study of the kinetics of thrombus formation" DNTS/Austria 01/10 of 24.08.2017, funded by the National Institute of Scientific Research and 2) MP1305 - Flowing matter under the COST program. He was the head of two of the projects, one national, financed by the National Fund for Scientific Research, and the other institutional, financed by the National Sports Academy.

7. Opinions, recommendations, and remarks

I have no significant comments on the materials and achievements of the candidate presented to me for evaluation, with the exception of some inaccuracies and inconsistencies, which do not change the positive assessment of the substantive nature and presence of significant contributions to Ivan Ivanov's work.

8. Conclusion

Based on the overview, both the scientific production and teaching activity of Assistant Professor Ivan Ivanov fully meet the requirements for occupying the academic position of "Associate Professor". I evaluate the overall activity of the candidate positively, and based on the above characteristics, I vote "FOR" holding the academic position "Associate Professor" in Professional field 7.6. Sports, specialty "Biomechanics" and I suggest to the respected members of the scientific jury to vote positively and award the academic position "associate professor" to Assistant Professor Ivan Mirchev Ivanov, Ph.D.

14/03/2023

Signature:

(Prof. Albena Alexandrova, Ph.D.)