

REVIEW

By PROF. MAGDALENA STEFANOVA PLATIKANOVA-IVANOVA, MD, PhD

Head of the "Hygiene and Medical Ecology" Section at the Department of "Hygiene, Epidemiology, Microbiology, Parasitology and Infectious Diseases" at the Faculty of Medicine at Thrace University, Stara Zagora

Scientific specialties: Occupational medicine and Occupational diseases

REGARDING: THE DOCTORAL THESIS FOR AWARDING THE EDUCATIONAL AND SCIENTIFIC DEGREE PHILOSOPHY DOCTOR IN THE DOCTORAL PROGRAM HYGIENE (Incl. OCCUPATIONAL, COMMUNITY, SCHOOL, RADIATION, etc.), PROFESSIONAL FIELD 7.1. MEDICINE, FIELD OF HIGHER EDUCATION 7. HEALTHCARE AND SPORTS

ON THE SUBJECT:

ASSESSMENT OF THE PSYCHOEMOTIONAL TENSION LEVELS IN MANAGERS AND OPTIONS FOR STRESS CONTROL THROUGH AN ACTIVE PHYSICAL PROGRAMME

from

**TATIANA BOYKOVA MATEVA, MD
(doctoral student - full-time study)**

RESEARCH SUPERVISOR:

PROF. TEODORA TODOROVA DIMITROVA, MD, PhD

Basis for writing the review:

Based on Order No. R-109-169/25.03.2025 of Prof. Dimitar Raikov, Rector of the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna and decision of the Faculty Council of the Faculty of Public Health, protocol No. 242/19.04.2025 I have been selected as a member of the Scientific Jury for the thesis defence procedure of Tatiana Boykova Mateva, MD, for obtaining the educational and scientific degree of Philosophy Doctor.

General assessment of the documentation submitted for thesis defence:

The set of documents (presented on paper and electronic media) for initiating the procedure and admission to public defence of Dr. Tatyana Boykova Mateva's

thesis of has been prepared and compiled as per the requirements of the Development of Academic Staff in the Republic of Bulgaria Act (DASRBA), its Implementation Regulations, the Rules and Regulations for Academic Staff Development of the MU-Varna. It contains all required documents, clearly described and arranged.

Career Profile of the Doctoral Candidate

Tatyana Boykova Mateva, MD, completed her secondary education at Fourth Foreign Language School Frederic Joliot Curie in Varna in 1986. In 1992, she received her Master's degree in Medicine at the Medical University "Dr. Paraskev Stoyanov" – Varna. Dr. Mateva's professional career began in 1992 as a resident physician at the Obstetrics and Gynaecology Department of St. Anna General Hospital in Varna. From 1994 to 1999, she served as Head of the Health Services, Emergency Medical Care, in the village of Kitka, Avren municipality, Varna region. Since 2000, she has been the Medical Director of Boiron Bulgaria. At the same time, Dr. Mateva practices as a physician at the Occupational Health Service at the Medical Centre Mladost, Varna.

Dr. Mateva's pursuit of enhancing her professional skills is truly remarkable. This is demonstrated by her involvement in numerous specialised and qualification courses with theoretical and practical focus. She is certified in two specialities – Occupational Medicine (2016) and Nutrition and Dietetics (2020).

Due to her impressive expertise and wide array of scientific interests, Dr. Mateva has become a highly valued member of many committees and organisations. She is a member of the Bulgarian Medical Association (BMA), Bulgarian Academic Society of Occupational Medicine (BASOM), Bulgarian Society of Nutrition and Dietetics (BSND), Bulgarian Medical Homeopathic Organisation (BMHO), and the National Association for Practical Dietetics and Integrative Medicine (NAPDIM), where Dr. Mateva is on the board of directors. Her involvement in multiple professional associations highlights her exceptional organisational abilities and her commitment to meaningful social engagement.

Dr. Mateva is fluent in written and spoken French and Russian.

After a successful competition in 2020, Dr. Mateva was enrolled as a full-time doctoral student in the doctoral program in Hygiene (including occupational, community, school, radiation, etc.) at the Department of Hygiene and Epidemiology, the Faculty of Public Health, MU-Varna. She was authorised to defend her PhD

thesis after completing her individual academic program, as indicated by the provided documentation.

Relevance and relevance of the dissertation topic:

The thesis is a comprehensive scientific study on a current and highly relevant issue for society – psychemotional tension in management personnel and options for stress control through an active physical program.

Stress is defined as a "cognitive perception of lack of control and/or unpredictability, which is expressed through psychological or behavioural response." The associated concept of "stressor" should only be used for stimuli where predictability and control are in question. Both concepts are often used with a certain bias when describing normal physiological reactions necessary for maintaining human behaviour.

Epidemiological studies show that some social groups have better prospects for health and longevity than others. Social class, race, and ethnicity of the individuals are included in the systems for evaluating morbidity and diseases. The root cause of this dependency is multifactorial, challenging to investigate, and likely related to a number of stressors. There are differences in exposure to serious stressors in everyday life. Many of them are specifically related to the work process – economic difficulties, workplace exploitation, upcoming retirement/redundancy, nursing care for loved ones, or discrimination.

Management personnel represent a small but particularly significant social group. At present, in the developed world, people rely primarily on their managers for the organisation of social processes. All necessary goods and services are provided by organisations led by managers, and this trend has been present for the past century and a half. Almost all "working" adults spend half of their conscious hours under the influence of managers. Few studies examine stressors at different job levels, especially among management personnel. Historically, it has been acknowledged that being physically active brings a reduction of both physical stress and perceived stress. This determines the need to introduce an active physical programme for "management personnel" in various fields of activity.

General data for the dissertation:

The research study submitted for review is structured by the modern standards and the requirements of the Medical University "Prof. Dr. Paraskev Stoyanov" –

Varna. This is a doctoral thesis for awarding the scientific degree of Philosophy Doctor in medicine. The thesis is presented on 128 pages, including 27 figures, 34 tables, and 8 appendices. The bibliography consists of 172 titles, of which 2 are in Cyrillic and 170 in Latin. The structure is effectively arranged, maintaining a proper balance between the literature review and other components – aim and tasks, methods, results and discussion, recommendations, conclusions, final remarks, and contributions.

The title is formulated precisely and clearly and fully corresponds to the content.

In the Introduction, Dr. Mateva emphasises the significance of the issue.

The literature review is comprehensive, goal-oriented, and systematically organised. As a theoretical foundation and study of available literature sources on the thesis subject, it is well-structured in seven sections. Dr. Mateva thoroughly and comprehensively defines the essence of stress, provides a historical overview of the concept, and presents contemporary views on the physiological aspects of stress, starting with the concept of the founder Selye. His views are further developed by modern interpretations on the subject and later discovered mechanisms of gene transcription, epigenetics, and signal transduction. While Selye emphasises the homogeneity of the animal response against unspecified stressors, the contemporary perception of personalised medicine reveals the unique characteristics inherent to each organism, which is influenced by various factors – developmental, genetic, or environmental. Strong or unusually prolonged stressors, on the other hand, can generally alter the physiological functions of the organism as well as its psychological perceptions. In her thesis, the author additionally examines modern perspectives regarding the pathophysiological aspects and social significance of stress. She focuses intently on work-related stress, identifying 6 groups of stress factors (internal to the nature of work, career development, role-related stress, workplace relationships, corporate environment, and the interface between work and home). The review places great emphasis on the benefits of physical activity in relation to somatic health and the potential contribution of physical activity in stress control.

The author's writing style reflects her understanding of current scientific studies, allowing her to reinforce the aims and objectives of her research.

The aim of the thesis is clearly defined: to establish the correlation between levels of psychoemotional tension and physical activity (represented through an

active physical program) among managerial personnel. This will help develop measures to reduce stress. Achieving the goal is linked to 6 specific tasks. They are formulated clearly, precisely, and in logical sequence and specifically outline the parameters of the research.

The design of the study applies several different methodologies, including documentary, sociological, quantitative (occupational-physiological - ECG, response time, Dot cancellation test), laboratory (thyroid hormones), imaging (thyroid ultrasound), statistical, and graphical methods. The study cohort is management personnel (leaders, executives) in Bulgaria. The research is conducted in 3 phases (determining eligibility for participation, examining maximum and minimum levels of stress), which are combined into one cycle. One cycle is completed by a study participant within 3 months.

The results represent the core part of the thesis. They are well-documented, presented in detail, and well-illustrated. For the period 2021–2023, at the Medical Centre Mladost in Varna, 152 management personnel (121 women and 31 men) aged 30-60 years from various sectors such as manufacturing, media and communications, financial services, information technology, and commerce were studied. Two dropped out due to health issues. The managerial role is often associated with high levels of stress related to project management, tasks, and budget frameworks. The work process for this group of personnel is often carried out with time constraints, psychoemotional strain arising from the necessity to face challenging choices, and high responsibility for potential tangible and intangible damages. Based on this, the doctoral student evaluates the study participants as working under high stress levels. The main risk is the difficult management of personal stress and potential burnout syndrome.

Most of the study participants are not involved in any active physical program, with 83 or 55.3% of participants being physically inactive and 67 or 44.7% being physically active. The most common sport is fitness, followed by jogging. The relative share of men with an active physical program is greater than that of women. Women predominate in the target group, which can be attributed to the increasing presence of women in leadership positions. Leadership positions in Bulgaria are significantly more often held by women (40.4%) compared to the average percentage for women in EU countries (35%), according to ILOSTAT data. Women are more proactive and engaged in health-related preserving activities, assessment of nervous mental

tension and willingness to seek options for managing stress-related issues. This pattern is evident in their online search for such information (48.7%) compared to men's (39.5%) search for health-related information online.

The stress level in the study group was assessed using the Four-Dimensional Symptoms Questionnaire (4DSQ). High distress among management personnel is expected, as this cohort regularly faces intense levels of work-related stress. The PhD candidate validates the findings in worldwide academic sources that stress contributes to an individual's perception of depression and sleep disturbances.

Stress in management personnel affects attention and the ability to focus on work tasks. The Bourdon-Wiersma test was used to determine this. The productivity and success ratios were also studied before and after the weekend. A tendency of lower values in the success ratio after the weekend was found, while there was no such trend in the productivity ratio examined before and after the weekend. For the success ratio after the weekend, the difference between physically active and physically inactive individuals is statistically insignificant. The response time to a specific stimulus is a direct reflection of cognitive function and stress levels. When determining the response time indicator, the results show that it is lower in physically active compared to physically inactive individuals. The shorter response time after the weekend in the group of executives with an active sports routine is explained by the positive impact of physical activity on stress levels and improvement of cognitive functions.

The weekend is crucial for recovery from work fatigue and psychoemotional tension for those working in stressful conditions. Effective rest during the weekend leads to enhanced productivity and increased involvement during the following week. Study participants who have recovered effectively demonstrate increased vitality and focus in their professional tasks.

The discussion of the results deserves high praise. The discussion reflects the probable causes for the specific results and the opinions of various researchers on the issue. In general, it is reasonable to conclude that the findings are interpreted appropriately based on the existing scientific data.

Conclusions:

The 5 conclusions made are correctly formulated. They correspond to the stated aim and objectives. The author states that:

♦ The methodology for stress assessment is adequate for the purposes of this study and similar ones, as the measured values correspond to general averages for the population.

♦ The indicators associated with high stress levels do not differ significantly between the two genders and the two groups.

♦ A significant difference in response time after rest is registered in all studied groups by gender and physical activity.

♦ APP has limited overall influence on the stress levels in "management personnel" but significant influence on certain indicators (response time after rest).

♦ Response time after rest, besides being an important indicator of overall stress levels, can also be considered a significant individual factor in assessing the individual's productivity, particularly in "management personnel"

Recommendations:

As a result of the analyses, conclusions, and final remarks, 5 recommendations have been made. The described methodology is both comprehensive and easily applicable (cost-efficient and with respect to equipment) in various fields of activity. The Active Physical Programme (APP) is an important factor for response time after rest and a beneficial factor for general stress levels. It is recommended for all groups but is essential for "management personnel" who need quick response times.

The PhD candidate appeals to employers and occupational medicine specialists to conduct studies on the levels of psychoemotional tension among management personnel in the enterprises they are in charge of. This will help develop strategies and programmes to influence stress and promote an active lifestyle for managers.

Conducting information campaigns on the importance of the Active Physical Programme (APP) for management personnel can be used to promote this programme.

My recommendation to Dr. Mateva is to continue working on the subject and actively promote her research outcomes among her peers and the general public, perhaps through round table discussions or by publishing a monograph.

Contributions:

The research has resulted in six distinct contributions, which are both original in concept and applicable in practice. I believe their description is precise, without unnecessary repetition of established facts, and I accept them entirely. The contributions emphasise the value of the thesis:

- ◆ For the first time in Bulgaria, a definition of the term "management personnel" is provided in regard to workplace stress studies.

- ◆ For the first time in Bulgaria, a definition of "active physical programme" is provided regarding workplace stress studies.

- ◆ For the first time internationally, a methodology is developed for indirect, combined (self-assessment, equipment-based, laboratory and dot cancellation test) evaluation of stress levels, which can be used as a groundwork for future research.

- ◆ For the first time, the 5PB device by © GETA Centrum s.r.o is used to evaluate response time as an indirect indicator of stress in "management personnel."

- ◆ For the first time, a study design examining levels of neuropsychological load at the end and the beginning of the work week is applied to research recovery in physically active versus physically inactive personnel.

The described methodology is used to balance the correlation between management personnel with an active physical programme and executives without physical activity, using multiple criteria and indirect indices for stress levels. This represents a good practice and can be applied in fields with different activities.

Evaluation of the autoref:

The thesis summary is a key element within the provided documentation. It presents the main part of the thesis on a total of 71 pages. The thesis summary fully corresponds to the content of the thesis. It is impressively structured, incorporating both written and graphical elements.

A clear benchmark for the significance of Dr. Mateva's thesis are the 4 scientific papers on the subject and participation in 5 scientific forums. They contribute to spread awareness of the doctoral candidate's achievements among fellow scientists. The volume of her published works fully meets the quantitative criteria in the Rules and Regulations of MU- Varna for awarding the educational and scientific degree of Philosophy Doctor.

In Summary:

The work I have been given to assess is a finalised product of scientific research. It validates that the goals of the doctoral training program have been achieved. I would like to congratulate the research supervisor, Prof. Teodora Dimitrova, MD, PhD, and the doctoral candidate, Tatyana Mateva, MD, for choosing such a challenging and multifaceted issue, which opens up avenues for discussions and reveals subsequent research fields. This subject holds great importance and relevance because it requires a comprehensive approach to address the issues of psychoemotional tension and stress in the management personnel. It is essential to examine the issue from the viewpoint of a professional in occupational health, as well as to investigate how it relates to lifestyle and physical activity.

The thesis shows that Dr. Mateva can independently analyse and summarise data, discuss results, make appropriate conclusions, and provide recommendations. Considering this, I acknowledge that the thesis represents her individual effort, featuring relevant contributions and practical significance.

CONCLUSION

I provide an **entirely positive review** of the thesis presented by **Tatyana Boykova Mateva, MD**, a full-time doctoral student in the doctoral program of **Hygiene (incl. occupational, community, school, radiation, etc.)**, professional field **7.1. Medicine**, field of higher education **7. Healthcare and Sports** at the Department of Hygiene and Epidemiology, Faculty of Public Health, Medical University "Prof. Dr. Paraskev Stoyanov" – Varna. Thesis subject: **Assessment of the Psychoemotional Tension Levels in Managers and Options for Stress Control through an Active Physical Programme.**

The thesis contains scientific-theoretical, methodological, and applied results and **meets all requirements** of the Development of Academic Staff in the Republic of Bulgaria Act (DASRBA), its Implementation Regulations, and the Rules and Regulations for Academic Staff Development of the Medical University – Varna.

I affirmatively state **"YES"** and sincerely suggest to the honourable Scientific Jury to award the educational and scientific degree of Philosophy Doctor to **Tatyana Boykova Mateva, MD**, in the scientific speciality of Hygiene.

30/04/2025

Prepared by:
/Prof. Magdalena Platikanova-Ivanova, MD, PhD/

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