REVIEW

BY PROF. MAGDALENA STEFANOVA PLATIKANOVA-IVANOVA, MD, PhD
Vice-Dean of the Medical Faculty, Trakia University, Stara Zagora
Head of the Section of Hygiene and Medical Ecology, Department of Hygiene, Epidemiology, Microbiology, Parasitology and Infectious Diseases
Medical Faculty, Trakia University, Stara Zagora
Scientific specialties: Occupational Medicine and Occupational Diseases

REGARDING: THE PROCEDURE FOR THE PUBLIC DEFENSE OF A DISSERTATION FOR THE AWARD OF THE EDUCATIONAL AND SCIENTIFIC DEGREE "DOCTOR" IN THE DOCTORAL PROGRAMME "HYGIENE (INCLUDING OCCUPATIONAL, COMMUNITY, SCHOOL, RADIATION HYGIENE, ETC.)", PROFESSIONAL FIELD 7.1 MEDICINE, HIGHER EDUCATION AREA 7. HEALTHCARE AND SPORTS
DISSERTATION TITLE:

PSYCHOPHYSIOLOGICAL ASSESSMENT OF RISKS TO HEALTH AND WORK ABILITY IN SMALL AND MEDIUM-SIZED ENTERPRISES

By

DR GALINA DIMOVA NEYKOVA-SIDORENKO
(part-time doctoral candidate)

ACADEMIC SUPERVISORS:

PROF. TEODORA DIMITROVA, MD, PhD
ASSOC. PROF. TSVETELINA TARPOMANOVA, MD, PhD

Grounds for preparing the review:

I submit this review in my capacity as a member of the Scientific Jury appointed by Order No. R-109-301 of 28 August 2026, issued by Prof. Dimitar Raykov, MD, DSc, Rector of Medical University "Prof. Dr. Paraskev Stoyanov" – Varna. Pursuant to Minutes No. 264 of 25 August 2026 of the Faculty Council and report incoming No. 104-1302 of 27 August 2026 submitted by Prof. Teodora Dimitrova, MD, PhD, Dean of the Faculty of Public Health at Medical University – Varna, I have been designated to review the dissertation submitted by Dr Galina Dimova Neykova-Sidorenko for the award of the educational and scientific degree of Doctor (PhD).

The dissertation was approved for public defense by a decision of the Departmental Council of the Department of Hygiene and Epidemiology, Faculty of Public Health, Medical University – Varna, dated 27 July 2026.

Overall assessment of the documents submitted for the defense:

This review is based on the documents submitted for the procedure in hard copy and electronic form, which fully comply with the requirements of the Academic Staff Development Act of the Republic of Bulgaria, its Implementing Regulations, and the Regulations on Academic Staff Development at Medical University – Varna.

Examination of the documents confirms that the procedure fully complies with the applicable requirements. Dr Galina Neykova-Sidorenko has completed the activities prescribed by the individual and group curricula of the Doctoral School. The requirements concerning the preparation of the dissertation and the associated publications have been fulfilled. The doctoral candidate's original investigations commenced following approval by the Research Ethics Committee of Medical University – Varna. All required documents have been clearly described and systematically arranged.

Professional profile of the doctoral candidate:

Dr Galina Neykova-Sidorenko graduated with a Master's degree in Medicine from Medical University "Prof. Dr. Paraskev Stoyanov" – Varna in 1995. She obtained specialist qualification in Occupational Medicine in 2025. Between 1996 and 2002, she worked successively at the Transport Hospital in Burgas, the Emergency Medical Care Centre in Burgas, and as a general practitioner in Burgas. From 2002 to 2015, she worked as a medical representative at GlaxoSmithKline Bulgaria, and from 2015 to 2022 as a medical scientific representative in respiratory medicine at AstraZeneca Bulgaria. She currently holds the position of Key Account Manager – Severe Asthma at AstraZeneca Bulgaria.

In November 2020, Dr Galina Neykova-Sidorenko enrolled as a part-time doctoral candidate in the PhD programme "Hygiene (including Occupational, Community, School, Radiation Hygiene, etc.)" at the Department of Hygiene and Epidemiology, Faculty of Public Health, Medical University – Varna, as evidenced by the submitted documentation. She completed her doctoral training and was granted the right to defend her dissertation (Minutes No. 419 of 27 July 2026). Her professional interests include occupational medicine, psychophysiological assessment of work ability, occupational stress, workplace mental health, prevention of occupational burnout, and health promotion in small and medium-sized enterprises.

Dr Neykova-Sidorenko has received numerous awards and professional distinctions, including Best Team Coordinator, GlaxoSmithKline Bulgaria (2006); Best Vaccine Representative of the Year, GlaxoSmithKline Bulgaria (2012); Key Account Manager with Outstanding Contributions Exceeding Company Expectations, AstraZeneca Bulgaria (2023); and Key Account Manager with Outstanding Contributions Exceeding Company Expectations, AstraZeneca Bulgaria (2025).

She is proficient in English, Russian and Spanish and uses these languages professionally.

Relevance and significance of the dissertation topic:

The dissertation topic, "Psychophysiological Assessment of Risks to Health and Work Ability in Small and Medium-Sized Enterprises", is particularly timely and has substantial scientific and practical significance, which the doctoral candidate, Dr Neykova-Sidorenko, convincingly substantiates.

In the contemporary context of digitalization, an accelerated pace of work and increasing psychosocial demands, the assessment of mental health, functional status and work ability has become critically important for individual employees, organizations and public health systems alike.

The COVID-19 pandemic resulted in a sustained increase in perceived stress, anxiety, depressive symptoms, sleep disturbances and manifestations of occupational burnout. In the post-pandemic period, these developments have imposed new requirements on occupational medicine and organizational practices aimed at preserving work ability and mitigating psychophysiological risks.

Small and medium-sized enterprises are particularly vulnerable. They constitute a major segment of the economy and contribute substantially to employment, innovation and economic resilience. At the same time, however, they often have limited resources, insufficiently formalized mental health policies and fewer opportunities to implement structured interventions for stress management and burnout prevention. This highlights the need for scientifically grounded models for comprehensive assessment of work ability that integrate psychological, psychophysiological, cognitive and organizational indicators.

The dissertation has been developed in accordance with contemporary scientific perspectives on stress, mental health and occupational burnout.

General characteristics of the dissertation:

The dissertation submitted for evaluation meets the requirements of the Academic Staff Development Act and its Implementing Regulations. It comprises 186 pages and

includes all sections required by Medical University "Prof. Dr. Paraskev Stoyanov" – Varna for a dissertation submitted for the award of the degree "Doctor" (PhD) in Medicine.

The dissertation contains 68 tables and 23 figures. Its bibliography comprises 134 references. In terms of structure, content, technical presentation, academic style and language, it fully meets academic standards and constitutes a completed scholarly work.

The title is precise and clear and accurately reflects the content. The introduction emphasizes the significance of the research problem.

The literature review extends over 45 pages and is structured to provide a thorough and comprehensive examination of the problem. Dr Neykova-Sidorenko presents an extensive discussion of mental health as a fundamental determinant of positive functioning, quality of life and comprehensive personal development. Mental health may be viewed as a dynamic continuum extending from psychological well-being to various mental health difficulties and severe mental disorders. Particular attention is devoted to the importance of workplace mental health and to stress as a universal biological response to influences arising from both the external and internal environments. The review presents contemporary concepts of stress documented in the literature, the different types of stressors and occupational stress in the workplace. It also emphasizes the role of social support in stress management as an important complementary mechanism in coping with stress, a complex and multidimensional process requiring the mobilization of personal effort, selection of appropriate strategies and regulation of emotional responses.

Within the European Union, small and medium-sized enterprises account for 99% of all businesses and form the backbone of the economy. Managing occupational stress in these enterprises may involve specific challenges, including a lack of specialized stress-management personnel, financial constraints, the absence of formal procedures and policies, competing responsibilities and time constraints, and the influence of personal relationships.

The COVID-19 pandemic had a substantial impact on the mental and physical health of the working population, particularly employees of small and medium-sized enterprises. Social isolation, altered working conditions, including working from home, and uncertainty about the future were associated with reported deterioration in mental health among many employees. It is therefore necessary to identify specific effective measures for managing workplace health risks following the COVID-19 pandemic and to adapt work–rest schedules accordingly.

This section demonstrates the doctoral candidate's comprehensive knowledge of the research problem, ability to work with scientific literature, accurate and competent

interpretation of theories, strong sense of responsibility and appropriate citation practices. These qualities enable Dr Neykova-Sidorenko to provide a sound rationale for the aims and objectives of her original investigations.

The aim of the dissertation is clearly defined: to conduct a psychophysiological assessment of health and work ability among employees in administrative and production units of small and medium-sized enterprises and, on that basis, to propose effective work–rest schedules that account for lifestyle-related factors, the working environment and individual employee characteristics affecting work ability. Five specific objectives have been established to achieve this aim. They are clearly and precisely formulated, logically sequenced and delineate the parameters of the investigation.

The study design employs several methodological approaches, including documentary, sociological, physical examination, laboratory and statistical methods. The study population comprises 314 employees of small and medium-sized enterprises working in administrative and production units. The predominantly mental-work group includes 216 participants, while the predominantly physical-work group comprises 98 participants. A questionnaire addressing lifestyle, harmful habits and dietary practices was administered. Work ability was evaluated using relevant performance tests. Mental health was assessed using standardized psychometric instruments, with analyses restricted to respondents who had completed the respective questionnaires in full: Hospital Anxiety and Depression Scale (HADS), 38 participants; Zung Self-Rating Depression Scale (SDS), 79 participants; Perceived Stress Scale (PSS-10), 73 participants; and Maslach Burnout Inventory (MBI), 66 participants.

The results constitute the main part of the dissertation. This section is exceptionally well organized and supported by accurately presented tables and figures. The presentation of the findings demonstrates Dr Neykova-Sidorenko's conscientious and rigorous handling of research data, appropriate application of analytical methods and capacity for in-depth interpretation. The analysis deserves particular recognition for its sound structure, logical coherence and consistency within the selected methodological framework. The author's ability to interpret data and to analyze and synthesize scientific information merits high praise.

The study population encompasses employees from five economic sectors: administration (23.6%), information technology (39.2%), construction (12.7%), garment manufacturing (18.8%) and agriculture (5.7%).

The mean age of participants is 41.9 ± 0.7 years (range: 17–76 years). A systematic difference is observed according to the nature of work: the mental-work group is younger (39.34 ± 0.8 years), whereas the physical-work group is older (47.91 ± 1.3 years). Regarding health-related habits, the population exhibits a relatively active

and stimulant-associated profile (coffee consumption, walking and sports), with moderate beer/wine consumption and less frequent consumption of spirits. A total of 28.9% of predominantly physical workers report never engaging in sports, compared with only 13.4% of screen-based workers. Regarding health status and somatic disease, the most prevalent family histories are hypertension (27.4%) and diabetes mellitus (19.5%), while family histories of ischemic heart disease and cerebrovascular disease are each approximately 11–12%.

Overall work ability was assessed using the Work Ability Index (WAI). Overall work ability was assessed using the Work Ability Index (WAI). The findings indicate generally preserved work ability in the study population. Comparative analysis by type of work reveals differences in the distribution of work ability categories between mental and physical workers. Poor and moderate work ability are uncommon in both groups, but the higher categories show different distributions. Good work ability is more frequent among predominantly physical workers, whereas very good work ability predominates among predominantly mental workers. Mean work ability generally declines with age, although this does not preclude older workers from demonstrating initial adaptation to work and a final increase in performance.

Standardized psychological assessment methods were used to evaluate depression, anxiety and perceived stress, including HADS for anxiety and depression and the Zung Depression Scale. The relationship between stress levels and work ability was examined. Analysis of the association between depressive symptoms measured using the Zung scale and changes in psychophysiological status among predominantly mental workers revealed statistically significant relationships between depressive symptom severity and changes in selected indicators of the Well-being–Activity–Mood (SAN) test, as well as certain measures of work ability.

The PSS-10 assessment of perceived stress indicates a predominance of participants with moderate stress levels (54.8%), followed by those with low perceived stress (43.8%); high stress levels are rare (1.4%). This profile is characteristic of an employed population exposed to occupational demands and the need to adapt to the working environment, but not generally reaching levels associated with pronounced psychoemotional maladjustment. The study demonstrates a statistically significant association between reduced personal accomplishment and indicators of psychophysiological fatigue under different types of workload. In predominantly physical work, the principal factors are peripheral muscle fatigue, static loading, posture and localized pain; in mental and psychosensory work, they include sustained attention, processing speed, monotony, visual strain, time pressure and emotional self-regulation.

Employers can play an important role by providing mental health support programmes, counselling and other resources to help employees manage stress and anxiety.

Dr Neykova-Sidorenko formulates overarching conclusions consistent with the stated aim, objectives and findings of her original research.

Conclusions and recommendations:

Based on the results obtained and the analyses conducted, conclusions and recommendations have been formulated concerning the psychophysiological assessment of risks to health and work ability in small and medium-sized enterprises.

The dissertation emphasizes that mental health and work ability among employees of small and medium-sized enterprises are closely interrelated and influenced both by the nature of work and by the broader organizational and social context. The contemporary working environment, further complicated by the consequences of the COVID-19 pandemic, creates conditions for increased psychoemotional strain, which may manifest as higher perceived stress, anxiety, depressive symptoms, emotional exhaustion and fluctuations in subjective well-being. Differences between predominantly mental and predominantly physical workers underline the need for differentiated interpretation of results, since occupational groups are exposed to different combinations of risk factors, adaptive mechanisms and coping resources.

Some adverse outcomes are associated with behavioral and health characteristics such as insomnia, smoking, insufficient physical activity and aspects of daily routines, supporting the multifactorial nature of psychophysiological risk.

The findings support the need for comprehensive measures, including optimization of work–rest schedules, early prevention and psychological support.

The doctoral candidate advocates a differentiated approach to maintaining work ability in small and medium-sized enterprises, taking into account the nature of work, age and length of service, psychoemotional workload and observed sex differences. For predominantly mental workers, particularly appropriate organizational measures include greater autonomy, clear structuring and prioritization of tasks, rotation between activities with different cognitive demands, and the introduction of active breaks and short recovery intervals to sustain cognitive performance. For physically demanding work, ergonomic improvements, assistive devices, alternation between heavy and light tasks, limitation of prolonged shifts and more frequent microbreaks are of greater importance.

From a practical perspective, organizations are advised to develop a two-component intervention model combining organizational measures with individualized

support. Organizational measures may include clearer priorities, realistic time planning, time buffers, increased autonomy, active breaks, task rotation and improvements in working conditions, consistent with the published literature. Individual measures should include sleep-hygiene education, breathing and relaxation techniques, brief self-regulation strategies, psychoeducation about early symptoms of stress and depression, and facilitated access to psychological counselling or employee assistance programmes.

For women, among whom higher levels of emotional exhaustion, anxiety and depressive symptoms are more frequently observed, emphasis should be placed on stress-management programmes, emotional regulation and group support. For men, appropriate measures include rotation between different types of tasks, greater participation in decision-making, activities involving social interaction, and promotion of a healthy lifestyle, physical activity and cardiometabolic risk prevention.

Contributions:

The contributions of the study are both original and applied. They are presented in two categories: scientific and practical-applied contributions. In my opinion, they are accurately described, and I fully endorse them. They highlight the value of the dissertation through the following achievements:

- An integrated methodological model for comprehensive psychophysiological assessment of work ability has been applied;
- Patterns in the dynamics of work ability throughout the working day and working week have been established;
- The influence of psychosocial factors (perceived stress, depressive symptoms, anxiety and emotional exhaustion) on work ability has been demonstrated, together with their associations with cognitive and psychomotor indicators;
- Statistically significant differences in work ability and mental health indicators have been established according to the nature of work, economic sector, sex, age and length of professional service;
- For the first time, multivariable analysis (binary logistic regression) has demonstrated that the phases of initial adaptation to work (at the beginning of the week) and final performance increase (at the end of the week) are governed by different independent mechanisms;
- Methodological guidelines have been developed for multivariable occupational risk assessment, integrating objective cognitive/motor tests (KP, KT and tremorometry), biomarkers (cortisol and salivary alpha-amylase, sAA), and psychometric scales (PSS-10, WAI, Zung/HADS) to enable accurate prediction of work ability under real-world conditions;

♦ Practical guidelines have been proposed for organizational management of work processes in small and medium-sized enterprises through optimization of task allocation according to identified periods of peak and reduced work ability;

♦ Measures have been proposed to reduce psychophysiological workload, including active breaks, job rotation, ergonomic improvements and organizational interventions for tasks requiring high levels of concentration and precision;

♦ Recommendations have been provided for reducing occupational stress and burnout syndrome;

♦ A framework has been developed for algorithm-based workload allocation using objectively identified circadian and weekly phases of work ability;

♦ Targeted prevention profiles have been developed for occupational medicine, clearly defining two fundamentally different risk profiles for medical and biological monitoring in small and medium-sized enterprises (SMEs);

♦ An integrated model for periodic monitoring of mental health and work ability has been recommended, enabling early identification of adverse changes and timely implementation of preventive measures.

Assessment of the dissertation abstract:

The dissertation abstract comprises 55 pages, is appropriately structured and includes the main research findings, a list of related publications and participation in scientific forums.

Dr Neykova-Sidorenko presents three scientific publications related to the dissertation. She is the first author of all three, reflecting her personal contribution to their preparation. This publication record fully satisfies the quantitative criteria established in the Regulations of Medical University – Varna for the award of the educational and scientific degree "Doctor" (PhD).

Critical comments and recommendations:

I have no substantive criticisms of the dissertation.

The work submitted for my evaluation is a completed scientific study that confirms the achievement of the objectives of doctoral training. I congratulate the academic supervisors, Prof. Teodora Dimitrova and Assoc. Prof. Tsvetelina Tarpomanova, and the doctoral candidate, Dr Galina Dimova Neykova-Sidorenko, on their choice of such an interesting and interdisciplinary topic, which offers ample opportunities for scientific discussion.

CONCLUSION:

I give an **overall positive assessment** of the dissertation entitled **"Psychophysiological Assessment of Risks to Health and Work Ability in Small and Medium-Sized Enterprises"**, submitted by **Dr Galina Dimova Neykova-Sidorenko**, a part-time doctoral candidate in the doctoral programme **"Hygiene (including Occupational, Community, School, Radiation Hygiene, etc.)"**, professional field **7.1 Medicine**, higher education area **7. Healthcare and Sports**, at the Department of Hygiene and Epidemiology, Faculty of Public Health, Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

The dissertation **meets all requirements** of the Academic Staff Development Act of the Republic of Bulgaria, its Implementing Regulations, and the Regulations on Academic Staff Development at Medical University – Varna.

I cast my affirmative vote **"YES"** and, with conviction and pleasure, recommend that the esteemed Scientific Jury award the educational and scientific degree "**Doctor" (PhD)** in the scientific specialty **Hygiene** to **Dr Galina Dimova Neykova-Sidorenko**.

21 October 2026

Review prepared by:

Заличено на основание чл. 5, §1, б. „В“ от Регламент (ЕС) 2016/679

/Prof. Magdalena Platikanova-Ivanova, MD, PhD/