

**To: Assoc. Prof. Velina Gergelcheva, MD, PhD
CHAIRMAN OF A SCIENTIFIC JURY,
determined by Order No RD 38-616 / 20.11.20 23
of the Rector of SOFIA UNIVERSITY
"ST. KLIMENT OHRIDSKI"
PROF. ANASTAS GERDZHIKOV, DSc**

On your protocol No 1 / 4.12.2023.

(date of the 1st meeting)

Attached present: REVIEW

**under procedure for acquiring the scientific grade "PHILOSOPHY DOCTOR (PhD)"
Professional field 7.1. "Medicine",
Doctoral Program "Physiotherapy, Health Resort and Rehabilitation"
By *Desislava Metodieva Gerasimova, MD* – PhD student in independent
training;**

dissertation on topic

**"A CLINICAL APPROACH BASED ON THE BIOPSYCHOSOCIAL MODEL IN THE
TREATMENT OF CHRONIC PAIN IN THE CERVICAL REGION OF THE SPINE"**

Reviewer: *Prof. Dr. Iveta Borisova KOLEVA – Yoshinova, MD, PhD, DMedSc...*

**Professor from the Higher Attestation Commission in the Scientific specialty "Physiotherapy,
Health Resort and Rehabilitation"; Institution - Medical University – Sofia .**

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I declare that my participation as a reviewer does not contradict the requirements of the Law on Evaluation and Development of the Academic Staff of the Republic of Bulgaria.

I declare that I am not a related person within the meaning of § 1, item 5 of the Additional Provisions of the Law for Development of the Academic staff, and that I have no private interest, within the meaning of § 1, item 3 of the Additional Provisions of the Law, with the applicant.

The review has been prepared in accordance with the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Higher Education Act; the Regulations for the Implementation of the Law on the Development of Academic Staff in the Republic of Bulgaria; the Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Occupying Academic Positions at Sofia University "St. Kliment Ohridski".

The cited Rules of the Sofia University (revision dated 13.07.2022) were downloaded from the website of Sofia University on December 8, 2023.

**TO: Assoc. Dr. Velina Gergelcheva, MD, PhD
CHAIRMAN OF A SCIENTIFIC JURY,
determined by Order No RD 38-616 / 20.11.20 23
of the Rector of Sofia University "St.Kliment Ohridski
Prof. Anastas Gerdzhikov, DSc
UNDER THE PROCEDURE FOR "PHILOSOPHY DOCTOR"**

REVIEW

Concerning:

Dissertation on

**"A CLINICAL APPROACH BASED ON THE BIOPSYCHOSOCIAL MODEL IN THE
TREATMENT OF CHRONIC NECK PAIN"**

the PhD student of self-study

Dr. Desislava Metodieva Gerasimova;

Scientific Director:

Assoc. prof. Dr. Iskra Takeva, MD, PhD

along:

Procedure for acquiring "PHILOSOPHY DOCTOR"

Field of higher education:7. Health and sport

Professional area 7.1."Medicine",

PhD program: "Physiotherapy, Health Resort Medicine and Rehabilitation"

from:

Prof. Dr. Ivet Borisova KOLEVA, MD, PhD, DSc

*Professor of Scientific specialty "Physiotherapy, Health Resort Medicine and Rehabilitation" (Higher
Attestation Commission);*

Institution: Medical University – Sofia

The review was prepared in accordance with the requirements of the "Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Occupying Academic Positions" at Sofia University "St. Kliment Ohridski", downloaded from the Sofia University website on December 8, 2023.

1.SHORT BIOGRAPHICAL DATA

(according to applicant's data)

PhD student Desislava Gerasimova, MD was born in 1973.

In 2001 she graduated "Medicine" in Craiova, Romania, and in 2013 defended a clinical specialty in "Physical and Rehabilitation Medicine (PRM).

She has acquired additional qualifications in "Laser therapy", "Post-isometric relaxation", "Mobilization of peripheral joints", "Manual therapy", "Stress management with biofeedback" and others.

She has professional experience as a doctor – a specialist in FRF with outpatients and inpatients since 2009 and until now (at the University Hospital "St. Anna" - Sofia).

Dr. Gerasimova is an Assistant Professor at the Department of Physical Medicine at the Medical University (MU) – Sofia and there she has been conducting classes for students of Medicine ((Bulgarian-language training) since 2022. An Official Note from the Head of the PRM Department of MU-Sofia for workload in the 2022/2023 academic year amounting to 60 academic training and 12 hours in a basic course in the specialty PRM for postgraduates is presented. Since 2013 she has been teaching Rehabilitation students at the "Yordanka Filaretova" Medical College to MU - Sofia.

He speaks English, Romanian, French and Russian.

2. ANALYSIS OF PROCEDURAL REQUIREMENTS

(by documents)

Dr. Desislava Gerasimova is enrolled in 2022 as a PhD student in an independent form of education at the Department of "Neurology, Psychiatry, Physiotherapy and Rehabilitation, Preventive Medicine and Public Health" of the Medical Faculty of Sofia University (orders of the Rector of Sofia University No RD 20-1204 / 13.07.2022 and No 20-2446 / 22.12.2022). It has successfully passed internal defense procedure and has been charged with the right to official defense procedure – according to Order of the Rector of Sofia University RD 20-2177 / 15.11.2023.

The PhD student has presented a dissertation in full text and an auto abstract to it, which fully reflects the results of the dissertation.

There are 3 publications on the topic and 1 abstract of participation with a paper in a national conference on FRM, co-authored with the supervisor.

The opinion of the scientific supervisor is positive.

Dr. Gerasimova has presented a self-signed Declaration of authorship of the scientific work and the lack of plagiarism.

There is a Certificate of passed exams from the individual plan: doctoral minimum in the specialty (8.12.2022) for 20 ECTS credits and a course on "Academic Writing for PhD students" (10.02.2023) - 5 ECTS credits. For both exams there is a final score of Excellent 6.

There is also a negative Similarity Report from the electronic system of Sofia University for the prevention of plagiarism, confirmed by the scientific supervisor – according to article 65, paragraph 5, item 4 of the Rules of the Sofia University.

CONCLUSION on Items 1 and 2:

The candidate covers the formal requirements of the procedure for acquiring a PhD at Sofia University (Chapter Two, Section I and Section III (Article 62, paragraph 4 and Article 63, paragraph 1, 2, 3 and 4) of the Rules of the Sofia University): *has presented a full text and an Author's abstract of the Dissertation for "Philosophy Doctor", has successfully passed internal defense procedure and meets the minimum national requirements (according to Article 63, paragraph 4 of the Regulations).*

3. STRUCTURE OF THE DISSERTATION AND THE AUTHOR'S ABSTRACT

3.1. DISSERTATION

The structure of the dissertation is standard: Literature review, Purpose and tasks, Material and methods, Results, Discussion, Conclusions and references.

The volume of the work is 192 pages, distributed as follows: *Short content* – 1 page; *Detailed content* – 3 pages; *Abbreviations used* – 1 p.; *Introduction* – 1 and a half pages; *Literature review* - 46 pages; *Aim, tasks, hypotheses* – 2 pp.; *Material and methodology* – 6 pp.; *Methods for objectifying the results* – 9 pp.; *Results and analyses* – 89 pp.; *Discussion* - 11 p.; *Conclusion* – 1 p.; *Inference* - 1 p.; *Contributions* - 1 and a half pages; *Publications and participations* – 1/2 pp.; *Annexes* – 10 pp.; *Literature* – 11 pp.

The work is richly illustrated by 7 figures, 4 histograms, 45 diagrams and 47 tables. A list of figures, histograms, diagrams and tables is also attached (5 pages).

At the end, 3 annexes are given: Informed consent for conducting a clinical-epidemiological study (for patient signature - 1 p.), Patient brochure "Recovery activities in the presence of chronic back pain" (9 pp.), Kinesitherapeutic programme for home application (1 p.).

No Protocol has been submitted by the *Research Ethics Committee of Sofia University or the University Hospital "Ste Anna"*.

The **bibliography** cites a total of 175 sources, of which 29 in Cyrillic, the remaining 146 in Latin. 34 references from the last 5 years are included.

The list of abbreviations used includes a total of 22 terms, of which 15 in Bulgarian and 7 in Latin.

3.2. AUTHOR'S ABSTRACT

The volume of the autoabstract is 53 pages. It contains a synthesis of the analyses performed, and presents the results of the dissertation. It also includes a list of publications on the topic, as well as a list of conclusions and contributions (according to the author).

The attached list of *author's* publications on the topic includes 4 titles, of which two full-text publications in specialized editions in the field of PRM, one publication in the journal of General Medicine and 1 printed summary of participation in a national scientific forum on PRM.

4. ON THE TOPIC OF THE DISSERTATION

In recent years, clinical rehabilitation practice has seen a rapid entry and effective application of the modern biopsychosocial model.

It is an indisputable fact that psycho-therapeutic methods have been developing very quickly in recent years, which also requires the improvement of the rehabilitation process in patients with chronic pain - with the ultimate goal: improving the quality of life.

In this sense, the topic of the work "A clinical approach based on the biopsychosocial model in the treatment of chronic neck pain» is extremely actual and promising.

5. DISSERTATION ANALYSIS

5.1. INTRODUCTION

In the first part of the dissertation the topic is presented, a brief introduction on the topic is made, the motivation for developing the topic is explained. The leading role of the medical doctor – specialist in Physical and Rehabilitation Medicine (PRM) in the rehabilitation process is emphasized. Special attention is paid on the necessity to synchronize the Bulgarian experience with the world rehabilitation practice.

5.2. LITERATURE REVIEW AND BIBLIOGRAPHY

The literature review is divided into 12 subchapters.

The first 6 address the problem of pain: definition, classification and modulation, theories of pain initiation, psycho-emotional changes and behavior of the patient during illness, morphological changes in the brain in chronic pain. Special attention is paid to the psychological reactions of patients to chronic pain, as well as to the resulting structural changes in the brain in prolonged pain irritations.

Next 6 subchapters discuss in detail: the anatomical-functional features of the cervical spine, the etiology and-pathogenesis of chronic pain in the cervical region, diagnostics, differential diagnosis, clinical picture of chronic non-specific pain in the cervical region. Psychosocial factors for the occurrence and maintenance of neck pain are analyzed. Emphasis is placed on tests for measurement of the active range of motion in the cervical spine; and also on tolerance to the sensation of pain, as well as on mental and behavioral manifestations in patients with neck pain. Proper attention is also paid to the treatments of chronic neck pain – pharmacological, non-pharmacological, operative. Of course, the emphasis is on the methods of physical medicine: manual therapy, natural physical factors (PF) (heat and cold, massage, aerobic exercise, postisometric relaxation, underwater gymnastics) and preformed PF (ultrasound, TENS, diadynamic, interference and sinusoidal-modulated currents, magnetic field, laser). Special attention has been paid to therapeutic interventions consistent with the biopsychosocial model, namely: patient training to increase activity and self-care, pain and stress handling skills, ergonomic demands on the workplace; cognitive-behavioural therapy; motivational and meaning-oriented therapy; relaxation strategies.

At the end of the review, a summary is made, highlighting the possibilities of physical medicine, psychological and psychotherapeutic interventions.

As noted above: *the bibliography* includes a total of 175 sources (29 in Cyrillic and 146 in Latin). Almost all sources are from the current century, 10 are from before 2000, and 81 sources are from and after 2013, of which – 34 references are from the last 5 years. Reference Number 133 includes 2 sources.

5.3. PURPOSE AND TASKS, MATERIAL AND METHODS

Parts Three and Four are entitled "Purpose and Objectives", respectively "Material and Methodology". In separate chapter 5 are presented "Methods for objectification of results".

The purpose and tasks are correctly formulated. The aim is *"to track and compare the therapeutic effect of a physical therapy program, combined with methods influencing the psycho-emotional state, versus a conventional physiotherapy program in individuals with chronic neck pain"*.

The hypotheses concerning the impact of a complex rehabilitation program, including physical factors in combination with methods for influencing the psycho-emotional state of patients with chronic neck pain, are outlined in detail.

The following are presented in detail: Object of the study, Inclusion and Exclusion criteria, Organization and Design of the survey; Demographic indicators of patients, divided into two groups of 35 people.

The methods of treatment are also exposed – individual rehabilitation program, including in all patients: procedures with sinusoidal-modulated current (SMT) and with infra-red (IR) light, and kinesitherapeutic complex. In experimental group 2, methods of psycho-emotional impact were added, namely: "discussion of the disease, advice on coping with pain and stress", complex exercises for individual training at home, "recommendations for ergonomic facilities at work and rest, combined with an information brochure".

Documentary and sociological methods were used in the study. Clinical research methods include: Visual-analogue scale of pain /0-10/, goniometric assessment of mobility in cervical, thoracic and lumbar spine, body mass index (BMI). The questionnaires used are also presented: Neck Disability Index (NDI) and the Patient Health Questionnaire for Anxiety and Depression (PHQ-9). Patients were examined before and after rehabilitation, as well as 3 months later.

The statistical methods are also briefly presented. Statistical grouping of data; descriptive statistics; parametric analysis (One-sample Kolmogorov-Smirnov Test, Two Independent Samples Test, Paired Samples Test); nonparametric analysis (with Wilcoxon Signed Rank Test); Correlation analysis (Analysis of Variance ANOVA, Multivariant Analysis of Variances MANOVA); regression analysis (ANOVA, MANOVA). The software product SPSS Statistics, version 19 was used for data analysis.

5.4. RESULTS AND DISCUSSION

For a two-year period (2021 – August 2023) 70 outpatients of the Clinic of Physical and Rehabilitation Medicine of the University Hospital "Ste Anna" The treatment is carried out within 7 procedural days.

An analysis of risk factors is presented in detail: BMI, frequency of injuries in the cervical spine, smoking, age, gender.

The statistical processing of the results of the goniometric studies, as well as the changes in subjective indicators – pain, neck disability index, psycho-emotional state (PHQ-9); headache, dizziness, numbness – before and after therapy, immediately after therapy and after 3 months is presented in detail.

In the seventh chapter "Discussion" are commented both the socio-demographic data and the dynamics in objective and subjective indicators, as well as the quality of life. The results of the preliminary hypotheses have been substantiated.

5.5. ON THE CONCLUSION AND CONTRIBUTIONS

A synthesized review of what was done in the dissertation paper was made. The same text is included at the end of the Author's abstract.

Based on the results of her own study, the author expresses an opinion on the usefulness of the integrative approach with the inclusion of modalities for psycho-emotional influence: "in medical practice it is imperative to increasingly advocate the application of methodologies tailored to the biopsychosocial model."

Dr. Gerasimova has formulated a total of 7 conclusions, with which I agree in general. There are also 9 contributions, grouped as original scientific, of a confirmatory nature and scientifically applied contributions. I agree with some of the contributions, as the most important I take the following:

- *For the first time in Bulgaria, an extended complex assessment of the accompanying psycho-emotional changes in patients with chronic neck pain is offered, based on the biopsychosocial model;*
- *For the first time in Bulgaria, clinical comparative monitoring of patients with methods of psycho-emotional response to the conventional physiotherapy program has been conducted;*
- *Recommendations for expanding the therapeutic approach by using methods for influencing the psycho-emotional state of patients with chronic pain in the cervical region are proposed as advice for dealing with pain and stress, etc."*
- *An information brochure for the patient has been prepared and attached in order to raise his awareness of the nature of the disease, prognosis and possible ways to influence complaints in patients with chronic neck pain.*

CONCLUSION on Items 3, 4 and 5:

The dissertation presented satisfies the requirements laid down in the Law on the Development of Academic Staff in the Republic of Bulgaria, the Higher Education Act; the Regulations for the Implementation of the Law on the Development of *Academic Staff in the Republic of Bulgaria; the Rules for the Development of the Academic Staff of Sofia University "St. Kliment Ohridski"*.

My opinion is that the dissertation work has contributed to the topic: *Biopsychosocial model-based complex rehabilitation program, combined with methods of psycho-emotional response, in patients with chronic nonspecific neck pain.*

No data on inventions and rationalizations of the candidate are presented.

On the topic of the dissertation, the PhD student has presented: two full-text publications in specialized editions in the field of PRM, one publication in GP news and one printed summary of participation in a national scientific forum on PRM.

IN CONCLUSION:

In view of the above and despite my critical remarks, I believe that PhD student *Dr. Desislava Gerasimova* as a whole meets the requirements for acquiring the PHD (according to the Law on Development of the Academic Staff in Bulgaria and the respective Rules, *and the relevant Rules of the Sofia University*) for her dissertation on the topic: **"A CLINICAL APPROACH BASED ON THE BIOPSYCHOSOCIAL MODEL IN THE TREATMENT OF CHRONIC NECK PAIN"**, headed by Assoc. Prof. Dr. *Iskra Takeva, MD, PhD*.

I recommend to the esteemed members of the scientific jury to vote **FOR** completion of the procedure for acquiring the educational and scientific degree of Dr. Gerasimova and to award her the Educational and Scientific Degree **"Philosophy Doctor"**- in the field of higher education **7. Health and sports; Professional area 7.1."Medicine"**; *PhD program: "Physiotherapy, Health Resort Medicine and Rehabilitation"*.

My vote is positive.

December 30, 2023

Reviewer:

Prof. Dr. Ivet Koleva, MD, PhD, DSc
Medical University – Sofia