

Attention to: Assoc. Dr. Mariana Mihaylova, MD, PhD
CHAIR OF THE ACADEMIC JURY,
Appointed with Order № P-109-234 / 11.04.2023 by the Rector of the
MEDICAL UNIVERSITY "PROF. DR. PARASKEV STOYANOV" - VARNA
PROF. DR. VALENTIN IGNATOV, MD, Ph.D.

Your protocol № 1 / 12.04.2023 (date of the 1st session of the Jury)

Attached hereto:

REVIEW

of the procedure for awarding of *Philosophy Doctor's Educational and Scientific Degree*

Professional domain 7.1. "Medicine",

Doctor's Program "Physiotherapy, Rehabilitation and Health Resort"

By the PhD Student **Dr. Denitsa Nedelcheva Grozdeva**

Thesis on the following subject

"REHABILITATION AND QUALITY OF LIFE IN HIP ENDOPROSTHETIC PATIENTS"

Reviewer:

Prof. Dr. Ivet Borisova KOLEVA, M.D., Ph.D., D.Sc....

Professor from the Supreme Attestation Commission of Bulgaria under the Scientific specialty

"Physiotherapy, Rehabilitation and Health Resort";

From the Medical University of Sofia, Bulgaria

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I hereby declare that my participation as a reviewer does not conflict with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and its regulations.

I hereby declare that I am not a related person within the meaning of Art. 1, item 5, of the Supplementary provisions of the Law on the Development of the Academic staff, and I have no private interest in the candidate within the meaning of Art. 1, item 3, of the supplementary provisions of the Law on the Development of the Academic Staff.

The revision has been drafted in compliance with the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Higher Education Act; the Rules for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria; the Rules for the Development of the Academic Staff at the Medical University "Prof. Dr. P. Stoyanov" – Varna (adopted 2018, last updated in November 2022)).

The document «Regulations on the terms and Procedure for the development of the academic staff in the Medical University "Prof. Dr. P. Stoyanov"– Varna was downloaded from the website of the Medical University of Varna on April 25, 2023.

TO: THE CHAIR OF THE SCIENTIFIC PANEL,
Associated Professor Dr. Mariana Mihaylova, MD, PhD
Set up pursuant to Order No R-109-234 / 11.04.20 23, issued by the
Rector of the Medical University of Varna
PROCEDURE FOR THE AWARDING OF PHILOSOPHY DOCTOR'S
EDUCATIONAL AND SCIENTIFIC DEGREE

REVIEW

of

Thesis with the following subject:

"REHABILITATION AND QUALITY OF LIFE IN HIP ENDOPROSTHETIC PATIENTS"

By the Ph.D. student

Dr. Denitsa Nedelcheva Grozdeva;

Scientific Supervisor:

Associated professor Dr. Evgenia Petrova Dimova, Philosophy Doctor;

Scientific counselor:

Professor Gergana Boncheva Nenova, Doctor of Sciences;

Procedure for the Awarding of Philosophy Doctor's Educational and Scientific Degree

Area of higher education: 7. Health and sport

Professional domain: 7.1. "Medicine",

Doctor's program: "Physiotherapy, Rehabilitation and Health Resort"

by:

Professor Doctor Ivet Borisova KOLEVA - Yoshinova, MD, PhD, D.Med.Sc

Professor in the Scientific specialty "Physiotherapy, Rehabilitation and Health Resort Studies" (Higher Attestation Commission);

Institution: Medical University of Sofia, Bulgaria

The review was issued in accordance with the requirements of the "Regulations on the Terms and Procedure for the Development of the Academic Staff at the Medical University "Prof. Dr. P. Stoyanov" – Varna, downloaded from the website of the Medical University of Varna on April 25, 2023.

1. SHORT CV *(according to data, provided by the candidate)*

PhD student Dr. Denitsa Grozdeva was born in 1976. In 2001, she graduated "Medicine" at the Medical University - Varna, and in 2009 she acquired the clinical specialty "Physical and Rehabilitation Medicine (PRM)". She has additional qualifications in "Electrodiagnostics and Electrostimulation", "Laser Therapy", "Dental Physiotherapy", "Manual Medicine", "Acupuncture" and others.

She has professional experience as a doctor – PRM specialist with outpatients and inpatients since 2009 until now (in the Specialized Rehabilitation Hospital – Balchik, in the University Medico-Dental Center of MU - Varna and in the UCIM of MU - Varna). She conducts classes for students in Dental Medicine (Bulgarian and English-language training), as well as for students of Kinesitherapy.

He speaks Russian and English.

2. ANALYSIS OF THE PROCEDURAL REQUIREMENTS

(according to documents, supplied by the MU of Varna)

Dr. Denitsa Grozdeva was enrolled in 2021 as a Ph.D. student in an independent form of training at the Department of Physiotherapy, Rehabilitation and Sea Treatment at the Medical University – Varna.

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

It has successfully passed internal protection.

The opinion of the scientist is positive.

CONCLUSION on Items 1 and 2:

The candidate covers the formal requirements of the procedure for acquiring the educational and scientific degree “Philosophy Doctor” at the Medical University of Varna (Section III and Section IV of the Rules of the Medical University of Varna). *She has presented a full text and a Self-Report of the Dissertation for a Ph.D. degree, has successfully passed the internal defense of the thesis, and collected the necessary minimum of 30 points (required under Appendix 1 – pp. 95-96 of the Rules).*

3. ON THE STRUCTURE OF THE THESIS WORK AND AUTHOR'S SUMMARY

3.1. Thesis

The structure of the dissertation is standard: Literature Review, Purpose and Tasks, Material and Methods, Results, Discussion, Conclusions and Conclusion.

The volume of the whole work is 126 pages, and it is distributed in the following manner: *Contents* — 1 page; *Abbreviations used* — 2 pp.; *Introduction* – 2 ½ pages; Chapter One (*Literature review*) - 41 pages; Chapter Two (entitled *Objective, Tasks, Subject and Object of the study, material and methods*) - 14 pages; Chapter Three (*Results*) - 19 pages; Chapter Four (*Discussion*) - 14 pp.; *Generalization* (incl. scheme of the stages of rehabilitation in patients with hip endoprosthesis) - 5 pages; *Conclusions* - 1 page and a half; *Contributions* - 1 page; *Proposals to institutions* – ½ page; *Conclusion* – ½ page; *References* - 15 pages; *Annexes* – 6 pp.

The work is illustrated with 24 tables and 1 figure.

The annexes include the applied questionnaires and questionnaires for self-assessment of patients, as well as the *Protocol – Decision of the Committee on Research Ethics of the Medical University of Varna from May 2021*.

The bibliography includes a total of 134 sources, of which 53 are in Cyrillic and 81 in Latin.

The list of abbreviations used includes a total of 42 terms in Bulgarian. The terms are not arranged alphabetically, making it difficult to use the list.

The dissertation is written in correct, grammatically correct Bulgarian language.

The individual chapters are logically arranged. The style is scientific.

3.2. AUTHOR'S SUMMARY

The volume of the author's summary is 70 pages. It contains a synthesis of the performed work and presents the results of the dissertation. It also includes a list of relevant publications of the Ph.D. student, as well as a list of results or contributions (according to the author).

The attached list of the *author's publications* on the topic includes two titles – 1 full-text publication and 1 message on a scientific forum.

4. ON THE THESIS SUBJECT

In recent years, we observe a rapid penetration and effective application of modern methods of functional assessment and recovery in the clinical practice of medicine and orthopedic rehabilitation.

It is an indisputable fact that hip arthroplasty techniques have been developed very rapidly in recent years, which requires improvement of the rehabilitation process with the ultimate goal of improving the quality of life and the social reintegration of patients.

To this end, the thesis topic "*Rehabilitation and quality of life in hip endoprosthetic patients*" is extremely up-to-date and very promising.

5. DISSERTATION ANALYSIS

5.1. PREAMBLE (INTRODUCTION)

The thesis preamble presents the subject and the motivation for developing this topic. The leading role of the doctor–PRM specialist in the rehabilitation process is emphasized. Emphasis is placed on the need to synchronize the Bulgarian experience with the world's rehabilitation practice.

5.2. LITERATURE REVIEW AND REFERENCES

The literature review is divided into four subchapters.

The first subchapter «Hip endoprosthesis. A holistic approach to the problem.» emphasizes the need for an interdisciplinary approach to the organization of the hip endoprosthesis procedure and the subsequent recovery process. An analysis of some of the main causes of pain persistence in these patients was made: biomechanical and orthopedic; with an emphasis on: load on the lumbar spine, dysfunctional prolongation of the operated lower limb, peripheral nerve damage, etc. Some frequent complications after conventional hip arthroplasty are also cited, such as endoprosthesis luxation, aseptic loosening, periprosthetic fractures, and peri-implantitis. The author discusses the patient's satisfaction with health care, the patient's support from the family members, the role of some personal factors in the patient's recovery; also the impact of some work factors, such as static and dynamic workload and psycho-social factors.

The second subchapter is titled «*Rehabilitation – essence. Features in hip endoprosthetic patients. World and Bulgarian experience*». The PhD student examines basic principles of rehabilitation, with an emphasis on medical rehabilitation. The methods

of rehabilitation after hip arthroplasty are discussed in detail, including requirements of clinical pathway 265. Attention is to the kinesitherapeutic program and to some preformed factors, such as: low frequency pulsed magnetic field, interferential currents, and electrostimulations of *quadriceps femoris muscle*. The possibilities of home rehabilitation are also considered, and its insufficiency in Bulgaria has been established.

The third subchapter «Quality of life in patients after hip endoprosthesis» examines the concept of quality of life and the most commonly used questionnaires in this type of patients: WHO QOL 100, Harris Hip Score, WOMAC, SF-36, WHOQOL- Brief, Euro QOL 5 Dimensions.

The fourth subchapter is «Patient-centered approach and hip endoprosthesis». The author examines the benefits of introducing the patient-centered approach in the process of rehabilitation after conventional arthroplasty. The role of the medical doctor–PRM specialist PRM is outlined.

As noted above: **the bibliography** includes a total of 134 references (53 in Cyrillic and 81 in Latin). Some of the sources in Latin are from Bulgarian authors (11 titles).

Almost all sources are from the current century, with more than half (95 titles) from the last ten years.

Some sources are without a year of publication. There are some incompleteness and inaccuracies in quoting numbers Nos 10, 11, 31, 40, 43, 54, 58, 65, 79, 81, 84, 97, 99, and 112. Number 1 includes 2 sources.

The bibliography also includes 1 website.

5.2. GOAL AND TASKS, MATERIAL AND METHODS

The second chapter is entitled "Purpose, tasks, material and methods".

The goal and tasks are clearly formulated. The aim is "to study the change in the *quality of life in hip endoprosthetic patients who have undergone an individual rehabilitation program in the context of a clinical stay of 7 days and to study their social adaptation*".

The hypotheses concerning the reliability and informativeness of the World Health Organization generic questionnaire, entitled WHO QoL-Bref, are set out in detail; as well as the effectiveness of the individual rehabilitation program on the quality of life of patients after hip arthroplasty.

Documentary and sociological methods are used in the study. The WHO Quality of Life Research Questionnaire (WHO-QoL – Bref) is set out in detail.

The methods of treatment are also laid out – an individual rehabilitation program adapted to the patient, including: Deep oscillation, underwater exercises, suspension therapy, gait training with or without technical aids, analytic exercises, fitball exercises with a large Swiss ball, exercises with elastic resistance, dry and wet thermo-applications, cryotherapy.

Statistical methods are described: statistical grouping of data, descriptive statistics, and Cronbach alpha. The software product SPSS version 19.0 for Windows is applied for the data analysis.

5.3. RESULTS AND DISCUSSION

For one year (June 2021 - May 2022), 72 in-patients of the rehabilitation department at the Estreya Hotel were observed, with diagnosis of Z96.6 and treatment within 7 procedural days.

The socio-demographic characteristics of the investigated persons are presented in detail: distribution of patients by age, gender, working capacity, education, employment, marital status, children, residence (settlement), and income (monthly income). The distribution of patients by type and period after the arthroplasty is analyzed; the main diagnosis that led to endoprosthesis, leading complaints. The results of the assessment of the quality of life with the WHOQOL-BREF questionnaire are presented in detail – at admission and discharge, by areas – body, psychological, relations, and environment. An improvement in the quality of life in all patients is demonstrated – both for all patients and individually for each patient.

In the fourth chapter "Discussion" both socio-demographic data and dynamics in quality of life are commented. The role and significance of the different members of the multidisciplinary rehabilitation team is discussed, highlighting the role of the orthopedic physician and the FRM specialist.

5.4. SUMMARY AND CONCLUSION. CONTRIBUTIONS.

A synthesized review of what has been done in the thesis is made. The same text is included at the end of the Author's summary.

The patients studied were with many diseases, after conventional arthroplasty, the leading cause for the endoprosthesis was hip arthrosis. Preoperative rehabilitation was not performed in these patients.

Based on the results of her own study, the author expresses the opinion that "it is impossible and unnecessary to create and implement a unified rehabilitation protocol after hip endoprosthesis."

The Ph.D. student also offers a model of organization of the rehabilitation process in this type of patients, including preoperative rehabilitation.

Dr. Grozdeva has formulated a total of 6 contributions, grouped as theoretical-methodological and practical-applied. In general, I agree (in part) with some contributions, and namely:

- *For the first time in Bulgaria, a validated questionnaire for self-assessment of the quality of life, before and after an individualized complex rehabilitation program, has been applied in patients after conventional hip arthroplasty;*
- *The work proves the effectiveness of early inpatient rehabilitation on the quality of life after hip arthroplasty;*
- *A model of the organization of rehabilitation in these patients is proposed, including preoperative training.*

I appreciate the contributions of the work in the thematic field "Effectiveness of medical rehabilitation on the quality of life of patients after hip endoprosthesis". I strongly recommend the edition of a monograph on the treated problem by Dr. Denitsa Grozdeva.

SUMMARY on items 3, 4, 5
The presented thesis meets the requirements provided for in the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Law of the Higher Education; the Rules for the Implementation of the Law on the Development of the <i>Academic Staff in the Republic of Bulgaria; the Rules for the Development of the Academic Staff of the Medical University of Varna.</i>
I believe that the dissertation work has contributed <i>to the thematic field of the Effectiveness of medical rehabilitation on the quality of life of patients after conventional hip endoprosthesis.</i>
No data on candidate's inventions and rationalizations have been presented.
The Ph.D. student has presented a full-text publication and 1 participation in a scientific forum on the topic of the dissertation.

IN CONCLUSION:
In view of the abovesaid and despite the abovementioned critical remarks, I think that Ph.D. student Dr. Denitsa Nedelcheva Grozdeva meets as a whole the requirements for the awarding of Philosophy Doctor's Educational and Scientific Degree (as per the Law and the relevant Rules of the Medical University – Varna) for her scientific thesis entitled: "REHABILITATION AND QUALITY OF LIFE IN HIP ENDOPROSTHETIC PATIENTS" , with scientific supervisor Assoc. Prof. Dr. <i>Evgenia Petrova Dimova, Ph.D.</i> , and scientific counselor <i>Prof. Gergana Boncheva Nenova, D.Sc.</i>
I recommend that the honorable members of the Scientific Panel vote on the completion of the awarding procedure and grant the Ph.D. student the Doctors' Educational and Scientific Degree in Higher Education area 7. Health and sport; Professional domain 7.1. "Medicine" ; Doctor's program: "Physiotherapy, Rehabilitation and Health Resort" .
My vote is positive.

05.05.2023

Reviewer:



Prof. Dr. Ivet Koleva, D.Sc.
Medical University of Sofia, Bulgaria