

## STATEMENT

By Assoc. Prof Maya Stefanova Krastanova, MD, PhD  
CHAIR OF THE EXAMINATION COMMITTEE  
APPOINTED BY ORDER № P-109-639/ 21.12.2023  
FROM THE RECTOR OF THE MEDICAL UNIVERSITY  
"PROF. DR. PARASKEV STOYANOV" – VARNA

RE: The thesis of Dr. Tsvetomir Yankov Yankov for awarding for educational and scientific degree "Doctor of Medicine" in the field of higher education 7. Health and sport, professional field 7.1 Medicine, scientific discipline Physiotherapy, Thalassotherapy and Rehabilitation at the Medical university "Prof. Dr. Paraskev Stoyanov" – Varna, on the topic of "*Study on the combined use of high-energy laser and manual therapy in patients with functional thoracic spine disorders*" with thesis supervisor Assoc. Prof. Dr Iliya Todorov Todorov, MD.

### **BIOGRAPHICAL DATA AND PROFESSIONAL QUALIFICATIONS**

Dr. Tsvetomir Yankov Yankov was born on 25.05.1989 in Veliko Tarnovo, where in 2008 completed his secondary education at the High School of Mathematics and Nature "Vasil Drumev". In 2014 he completed his higher education in medicine with a Master's degree at the Medical University Varna. In 2020 he acquires a specialty in Physical and Rehabilitation Medicine.

His professional medical career began in 2014 at the CSMP in the city of Varna to the emergency branch in Dolni Chiflik. In 2016 Dr. Tsvetomir Yankov was appointed as a resident at the Clinic of Physical and Rehabilitation Medicine at the University Hospital "St. Marina" Varna EAD. Since 2020 he holds the position of assistant to the Board of "Thalassotherapy, Physiotherapy and Rehabilitation" at the Department of Physiotherapy, Rehabilitation, Thalassotherapy and Occupational Diseases at Medical University Varna. He leads practical seminars for bulgarian and english speaking medical students, rehabilitation therapists, midwives and nurses.

Dr. Tsvetomir Yankov Yankov has participated in a number of qualification courses for postgraduate training: laser therapy, Cyriax orthopaedic medicine, manual therapy and PNF. He has passed qualification courses "Legal basis regulating the training of PhD students", "Methodology of scientific research", "Ethics of scientific research", "Statistical methods for data processing and presentation", "Communication techniques and presentation skills", etc.

Dr. Tsvetomir Yankov Yankov is fluent in written and spoken English and Russian.

His main professional and scientific interests are in the field of manual medicine and laser therapy. Dr. Tsvetomir Yankov Yankov is a member of the Bulgarian Medical Association, the Association of Physical and Rehabilitation Medicine and the Bulgarian Society of Manual Medicine.



## **SIGNIFICANCE AND RELEVANCE OF THE TOPIC**

Functional thoracic spine disorders are a common cause of pain and limited range of motion along the spinal column. Their significance and prevalence dominate over structural pathologies and degenerative changes, especially in the young and active age. Inaccuracies in the diagnosis of this type of pathology often lead to pharmacological burdening of the patient and chronification of the condition.

There are many studies in the scientific literature on the effects of manual therapy in functional disorders of the thoracic spine. All of them prove the effectiveness of manual manipulations in terms of functional status and pain symptomatology in the thoracic spine

Existing scientific data show that high-energy laser therapy combining two wavelengths (MLS - laser) is a physical factor with pronounced antioedema, anti-inflammatory and analgesic effects. Studies describing the clinical effectiveness of MLS-laser therapy for conditions associated with pain and limited range of motion in the cervical and lumbar spine are available.

In the dissertation dr Tsvetomir Yankov presents the use of high-energy laser and manual therapy in a common protocol for the treatment of patients with functional thoracic spine disorders. The PhD student investigated the clinical effectiveness of their combined application, comparing it with monotherapy of manual manipulations.

## **CHARACTERISTICS OF THE THESIS**

The dissertation of Dr. Tsvetomir Yankov Yankov is presented in 143 standard pages, in eleven adequately proportioned sections, illustrated with 42 figures, 24 tables and 16 appendices. The structure is according to the requirements specified in the Regulations for the Development of the Academic Staff of MU-Varna.

The bibliography consists of 166 sources, of which 18 are in Cyrillic and 148 in Latin. About 40% of the citations are from the last ten years, 10% of which are from the last five years.

## **LITERATURE REVIEW**

A major focus in the literature review is a detailed consideration of the etiology, pathogenesis, classification, and clinical presentation of functional thoracic spine disorders. The methods of treatment known so far are presented with the main emphasis on the factors of physical medicine. The available studies on the effect of manual therapy in patients with functional thoracic spine disorders are systematically reviewed. The main characteristics of laser radiation are described in detail and the application and clinical experience with high-energy MLS laser is presented.

## **AIM TASK AND HYPOTHESIS**



The dissertation is based on a clearly formulated aim - to investigate the effect of combined application of high-energy MLS laser and manual therapy in patients with functional thoracic spine disorders.

The tasks and hypotheses are logically formulated in accordance with the preliminary studies and subordinated to the stated goal.

## **METHODOLOGY AND ORGANIZATION OF THE STUDY**

A total of 82 individuals of both sexes aged between 18 and 50 years with functional thoracic disorders who met specific inclusion criteria were included in the study. They were randomly assigned to two groups, each with 41 patients. Study participants in group A received monotherapy with manual therapy, and those in group B received a treatment protocol combining manual therapy and a high-energy MLS laser.

To objectify the effect of the applied treatment in both groups, the following methods were used to assess functional status and pain in the thoracic spine: Ott's test for flexion and extension, goniometry for rotation in the thoracic region, assessment of spontaneous and palpatory pain according to the visual analog scale (VAS), the short of the McGill questionnaire and the Functional Rating Index. Patients were screened at three different time points: at baseline before treatment initiation, after completion of the treatment course, and on day 45 after initiation of therapy.

The PhD student has chosen appropriate statistical methods giving a complete and reliable evaluation of the data, according to the purpose of the presented study.

## **MAIN RESULTS AND CONTRIBUTIONS**

The results are in accordance with the set objectives. The PhD candidate has well synthesised and illustrated with tables and figures the distribution of patients in the two groups and the results obtained.

Prior to therapy, there was no statistically significant difference between the observed and comparison groups in terms of disease duration, demographic and anthropometric indicators, and subjective complaints. From the analysis of the baseline values of the monitored indicators, it can be seen that there is no difference between the two groups, resulting in their homogeneity with relative to each other.

The presented data show statistically significant clinical efficacy of both used therapeutic protocols with respect to the main symptoms, both after the end of treatment and in the long term.

The PhD student presented a comparative analysis between the two groups, demonstrating the superiority of the combined application of manual therapy and high-energy laser over monotherapy of manual therapy in terms of pain and Functional Rating Index. Equal therapeutic effectiveness was found for both methods in terms of influencing the range of motion in the thoracic spine.



The discussion of the results highlights their significance by comparing them with other studies in the world literature.

The most important **RESULTS** of the study are summarized in the conclusion.

Six clearly worded inferences have been synthesised which provide a concise summary of the results of the study and fully meet the goals and objectives set. The PhD candidate has clearly indicated the contributions of the dissertation for Bulgaria - four of theoretical-methodological nature and three of practical-applied nature.

The thesis of Lr. Tsvetomir Yankov Yankov, entitled "Study of the combined application of high energy laser and manual therapy in patients with functional thoracic spine disorders" presents results and conclusions with an original contribution to science and meets all the requirements of the Academic Staff Development in the Republic of Bulgaria Act (ASDRBA), the ASDRBA Implementing Regulations and the Regulations of MU-Varna.

The PhD student introduces an innovative method of treatment of the pathology under consideration, which is non-invasive and therefore has no negative side effects. With its painlessness, it is very well accepted by patients. Last but not least, the method has the advantage of shortening the treatment time as well as the smaller number of procedures that need to be performed within one treatment course.

Unfortunately, conducting the study in an epidemic environment significantly reduced the number of patients studied, but the results show the positive effect of this type of therapy. I believe that Dr. Yankov will continue to apply and expand the method in the future and will be able to compare it with the effect of other physiotherapeutic methods of treatment. This factor can also be combined with other appropriate natural and reformulated physical factors for a longer lasting effect. The dissertation work shows that the PhD candidate Dr. Tsvetomir Yankov has acquired in-depth theoretical knowledge and demonstrates qualities and skills for independent scientific research.

## **PUBLICATIONS RELATED TO THE THESIS**

There are 3 full-text publications related to the topic of the scientific work in periodical scientific publications, in which dr Tsvetomir Yankov Yankov is the lead author.

## **ABSTRACT**

The abstract is presented in 60 pages, structured in accordance with the requirements, reflecting faithfully and comprehensively the main points of the thesis.

## **CONCLUSION**

The presented dissertation on "Study on the combined use of high-energy laser and manual therapy in patients with functional thoracic spine disorders" is a complex study presents results with clearly formulated aim and objectives, with specific and well-founded conclusions and original contribution to science. The

materials provided meet all the requirements of the Academic Staff Development in the Republic of Bulgaria Act (ASDRBA), the ASDRBA Implementing Regulations and the Regulations of MU-Varna. Dr. Tsvetomir Yankov Yankov has acquired in-depth theoretical and practical knowledge, demonstrating qualities and skills for independent scientific research.

The thesis shows that the PhD candidate Dr. Tsvetomir Yankov Yankov possesses in-depth theoretical and practical knowledge, demonstrating qualities and skills for independent scientific research.

I believe that the development of a protocol for the treatment of patients with functional thoracic spine disorders involving high-energy laser radiation has great practical significance and can help the work of Physical therapist who have such equipment and treat the relevant contingent of patients.

I propose to the highly esteemed members Examination Committee award to the PhD student Dr. Tsvetomir Yankov the educational and scientific degree "Doctor" in the scientific specialty "Physiotherapy, thalassotherapy and rehabilitation".

Date: 24.01.2024  
Pleven

Prepared the statement:

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