

STATEMENT

By **Assoc. Prof. Katya Genova Mollova, PhD**
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External Member of the Scientific Jury, pursuant to Order No. R-109-149/26.03.2026 of the Rector of the Medical University “Prof. Dr. Paraskev Stoyanov” – Varna.

Regarding: Procedure for the public defense of a dissertation for the award of the educational and scientific degree “**Doctor**” to **Denislav Krasimirov Ivanov**

Dissertation title: *Application of Medical Dry Needling in Subacromial Impingement Syndrome of the Shoulder Joint*

Field of Higher Education: 7. Healthcare and Sports

Professional Field: 7.4. Public Health

Doctoral Programme: Health Care Management

Scientific Supervisor: Assoc. Prof. Silvia Ivanova Filkova, PhD

The documents submitted by the doctoral candidate, Denislav Krasimirov Ivanov, have been prepared in compliance with the **Academic Staff Development Act of the Republic of Bulgaria**, the Regulations for its implementation, and the Regulations for Academic Staff Development at the Medical University – Varna.

1. General Characteristics of the Dissertation

The submitted dissertation is devoted to a topical and practically significant issue in the field of rehabilitation and contemporary health care, namely the effectiveness of medical dry needling as part of the non-surgical treatment of patients with subacromial impingement syndrome of the shoulder joint. The study is aimed at investigating the possibilities for improving pain, muscle strength, range of motion, and functional capacity through the combination of conventional physiotherapy and medical dry needling.

The dissertation is structured into four main chapters, including a literature review; aim, objectives, and methodology; results and discussion; and an original algorithm for physiotherapeutic treatment. Separate sections present the conclusions, contributions, recommendations, publications, bibliography, and six appendices. The content demonstrates logical coherence and compliance with the academic requirements applicable to this type of scholarly work.

2. Relevance and Significance of the Topic

The topic is contemporary, scientifically grounded, and of clearly expressed practical value. In the introduction, the author argues that subacromial impingement syndrome is among the most common causes of pain, functional limitation, and reduced work capacity in patients of active working age, accounting for a substantial proportion of cases with shoulder pain. In this context, the search for effective, non-invasive, and reproducible conservative approaches is of major importance both for the patient and for rehabilitation practice.

Particularly relevant is the focus on medical dry needling as a minimally invasive intervention used for the deactivation of myofascial trigger points, modulation of pain, and influence on

neuromuscular function. Taking the aforementioned into consideration the choice of topic is fully justified. The focus towards demonstrating therapeutic effect through a randomized controlled trial further enhances the scientific value of the study.

3. Evaluation of the Literature Review

The literature review is extensive and thematically well structured. It examines the medical and social significance of subacromial impingement syndrome, the pathokinesiology and biomechanical mechanisms of injury, diagnostic approaches, treatment options, and the place of dry needling in contemporary physiotherapeutic practice. The author demonstrates solid knowledge of both classical and contemporary sources, including systematic reviews, clinical studies, and meta-analyses.

Particularly commendable is the effort to establish the relationship between biomechanical disturbances, myofascial trigger points, muscle imbalance, and the chronic pain process. This approach provides a sound theoretical framework for the subsequent experimental study. At the same time, the review consistently argues for the need for a multimodal, functionally oriented therapeutic approach.

4. Aim, Objectives, Hypotheses, Subject Matter, and Object of Study

The aim of the study is formulated clearly and specifically: to evaluate the effect of medical dry needling as an adjunct to a conventional physiotherapeutic protocol in the non-surgical treatment of patients with subacromial impingement syndrome.

The stated objectives are logically related to the aim and include: analysis of the scientific literature, selection of appropriate assessment instruments, development of an experimental therapeutic protocol, conduct of a prospective randomized controlled study, evaluation of therapeutic effect, and monitoring of its durability over time.

The formulated hypotheses are appropriate and testable. They are directed toward assessing the effect on muscle strength, pain, and functional outcomes, contrasting standard physiotherapy with the combined approach including dry needling. The object and subject matter of the study are correctly defined.

5. Research Methodology

From a methodological perspective, the dissertation is designed in a convincing manner. The study was conducted as a prospective, interventional, randomized, controlled, parallel-group clinical trial with two groups of 40 patients each, allocated in a 1:1 ratio to an experimental group and a control group. This constitutes a substantial strength of the work, as it ensures good internal validity and allows for a more reliable interpretation of the results.

Measurements were performed at four time points: prior to the intervention, 3 weeks later, 8 weeks later, and 6 months later. Clear inclusion and exclusion criteria were applied, and the assessment was carried out by means of clinical tests, goniometry, manual muscle testing, dynamometry, VAS, SPADI, and UCLA. The assessment tools employed are appropriate, multidimensional, and consistent with the aim of the study.

Another strong aspect is the standardization of the intervention. The control group received a conventional physiotherapeutic protocol, whereas the experimental group received the same protocol supplemented by medical dry needling according to a clearly described scheme. The

treated muscles, the needles used, the safety rules, and the objective of eliciting a local twitch response which is considered to be a marker of accurate needle placement into the trigger point.

6. Results and Their Interpretation

The results demonstrate consistent and convincing superiority of the combined therapy over standard physiotherapy protocol. The dissertation presents data from provocative and diagnostic tests, range-of-motion tests, assessments of muscle strength, pain, and functional scales, showing that across all major indicators the experimental group achieved faster, more pronounced, and more sustained improvement.

The statistical analysis indicates that the experimental group exhibited a significant increase in muscle strength, a more pronounced reduction in pain, and better functional recovery compared with the control group. Furthermore, it is emphasized that the achieved effect is not merely short-term, but is also maintained at the 6-month follow-up.

Particularly important is the conclusion that the combined therapy leads to:

- faster pain reduction;
- better muscle activation and coordination;
- increased range of motion;
- greater long-term functional sustainability.

In the functional assessment using the UCLA scale, the experimental group reached mean values of 31–32 points which corresponds to good functional recovery. At the same time in the control group the results stabilized around 27–28 points, i.e. near the threshold between unsatisfactory and good outcome. A similar trend was observed with SPADI.

The interpretation of the results is logical and consistent with the initially stated hypotheses. All three hypotheses were confirmed by the study data.

7. Contributions of the Dissertation

The submitted materials clearly distinguish theoretical on one side and scientific and applied contributions on the other.

The theoretical contributions include the expansion of the pathokinesiological model of subacromial impingement syndrome through an integrated analysis of biomechanical forces, muscle imbalance, scapulohumeral discoordination, and the role of myofascial trigger points in the chronic pain process.

The scientific and applied contributions include the development and successful validation of an original diagnostic and therapeutic algorithm for patients with SIS (subacromial impingement syndrome), integrating medical dry needling and conventional physiotherapeutic modalities. A standardized system for functional assessment has been introduced, combining clinical tests, instrumental measurements, and validated functional indices, thereby increasing diagnostic accuracy and the traceability of therapeutic effect. The study experimentally demonstrates statistically and clinically significant superiority of the combined therapy over standard physiotherapy, as well as durability of therapeutic effect through medium- and long-term follow-up extending to 6 months.

These contributions are substantial, with clear clinical effectiveness and practical applicability, and they enrich the national scientific output in the fields of rehabilitation and health care.

8. Publications and Dissemination

In connection with the dissertation, the doctoral candidate presents two publications related to the topic of the dissertation, which is in compliance with the requirements of the procedure and demonstrates dissemination of part of the scientific results.

9. Abstract

The abstract has been prepared in accordance with the dissertation and accurately reflects its main elements-relevance, aim, objectives, hypotheses, methodology, principal results, conclusions, contributions, and publications. Its content provides a sufficiently clear overview of the structure and achievements of the study.

10. Conclusion

The dissertation of Denislav Krasimirov Ivanov, entitled “*Application of Medical Dry Needling in Subacromial Impingement Syndrome of the Shoulder Joint*”, constitutes an independent, relevant, methodologically well-organized, and practically significant scientific study. The author demonstrates sound theoretical preparation, skills in the design and implementation of a clinical study, appropriate statistical analysis, and the ability to formulate well-founded scientific conclusions and practically applicable solutions.

On this basis, I consider that the submitted dissertation meets the requirements for awarding the educational and scientific degree of “**Doctor**”.

I give a positive evaluation of the dissertation and propose that the esteemed Scientific Jury award Denislav Krasimirov Ivanov the educational and scientific degree of “Doctor” in the doctoral programme “Health Care Management”, professional field 7.4. Public Health, field of higher education 7. Healthcare and Sports.

14.04.2026

Prepared by:

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