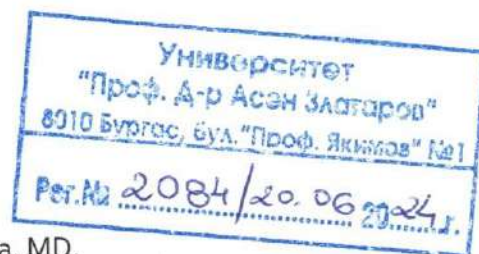


REVIEW



by Assoc. Prof. Lyubina Vesselinova, MD,
Military Medical Academy, First PRM Clinic, MHAT Sofia, member of the scientific jury according
to an Order of the Rector of the University "Prof. Dr. Asen Zlatarov" – Burgas No RD – 135,
according to the announced competition for the occupation of an academic position "Associate
Professor" from University "Prof. Dr. Asen Zlatarov" – Burgas

The competition is announced by field of higher education 7. Health and sports, professional field
7.1. Medicine and name of the scientific specialty Physiotherapy, Resortology and Rehabilitation
of the University "Prof. Dr. Asen Zlatarov" – Burgas, State Newspaper, issue 13 of 13.02. 2024 year

Candidate: Dr. Iliya Todorov Todorov, MD, PhD

1. Evaluation of the pedagogical training and activity of the candidate

Dr. Todorov was born on September 29, 1976 in Varna, Bulgaria.

In 1995 he graduated from the First Language School, English language class – Varna.

His higher education he received at the Medical University – Varna in the period 1995-2001
(diploma series MU No020634, minutes of the State Examination Committee No16 of 27 Sept
2001, registration No7205).

Since October 2, 2000 Dr. Todorov has been enrolled as a full-time PhD student at the Clinic of
Physiotherapy, Rehabilitation and Thalassotherapy at the Hospital in St. Marina – Varna.

In 2002 Dr. Todorov started his specialization in Physical and Rehabilitation Medicine at the
Department of Physiotherapy, Rehabilitation, Thalassotherapy and Occupational Diseases at the
St. Marina University Hospital - Varna.

On March 4, 2003 Dr. Todorov was appointed as an Assistant Physician at the Clinic of
Physiotherapy, Rehabilitation and Thalassotherapy at the Hospital in St. Marina – Varna.

In December 2006 Dr. Todorov successfully passed the state exam in Physical and Rehabilitation
Medicine and as of 01 January 2007 he is a full-fledged specialist (diploma series MUV No1496,
registration No012077 of 31 January 2007).

Since March 12, 2007 he has been appointed Senior Assistant Physician at the Clinic of
Physiotherapy, Rehabilitation and Thalassotherapy at the Hospital in St. Marina – Varna.

Since April 12, 2011 he has been appointed as Chief Assistant Physician at the Clinic of
Physiotherapy, Rehabilitation and Thalassotherapy at the Hospital in St. Marina – Varna.

On November 29, 2011 he successfully defended a dissertation on the topic: "Possibilities of some
factors of physical therapy to influence functional disorders of the sacroiliac joint". He was awarded
the educational and scientific degree "Doctor" in the scientific specialty Physiotherapy,
Resortology and Rehabilitation (diploma No5 of 20 Feb 2012).

In the period 2015 to 2019, Dr. Todorov was Head of the Scientific sector "Thalassotherapy,
Physiotherapy and Rehabilitation" at the Medical University – Varna.

Since 16 Feb 2015 he has been appointed to the academic position of "Associate Professor" at the
Medical University – Varna.

Since May 2015 he has been appointed Head of Physiotherapy and Rehabilitation Clinic at St.
Marina Hospital – Varna. He remained in these positions until December 2, 2019, when he left the
Medical University – Varna and St. Marina Hospital – Varna.

Since January 2022, Dr. Todorov has been appointed Head of Physical and Rehabilitation Medicine Clinic at the Heart and Brain Hospital.

1.1. Scientific memberships

Dr. Todorov has been Chairman of the Bulgarian Society of Manual Medicine (BDMM) since 2022. From 2006 to 2022 he is a Secretary of the same.

As a secretary of BDMM he is the main organizer of the years 2008 and 2016 FIMM Assemblies in Varna, as well as at the annual meetings of the society with international guest lecturers held at St. Marina Hospital – Varna. The event in 2016 was attended by over 50 doctors from abroad. Over the years, at these meetings, guest lecturers have been world-renowned specialists in Manual Medicine such as Prof. von Heymann, Dr. Terrier, Prof. Kuchera and others.

Since 2007 he has been participating annually as a delegate of BDMM representing the Republic of Bulgaria at the International Assemblies of FIMM (Federation Internationale de Medicine Manuelle).

Since 2017 Dr. Todorov has been elected Vice President of FIMM and Chairman of the FIMM Educational Board, which positions he holds so far.

Dr. Todorov is a member of the Bulgarian Medical Association and the Bulgarian Association of Physical and Rehabilitation Medicine (AFRM). Since 2012 he has been appointed Coordinator for Northeastern Bulgaria of AFRM.

1.2. Postgraduate qualifications and specializations

In the period 2009-2010 Dr. Todorov successfully completed courses I, II and III of DGMM (German Society of Manual Medicine) in Hannover, Germany – lecturers and examiners Prof. von Heymann and Dr. Wittig.

In the period 2011-2012 Dr. Todorov successfully completed a course in Neural Therapy at the Medical University – Varna with a guest lecturer Dr. Pieller.

1.3. Lecture activity

During the period 2013 - 2018 Dr. Todorov has participated as a guest lecturer in Courses in Manual Medicine in Istanbul and Ankara, Turkey.

Dr. Todorov has participated in a number of international congresses and assemblies in London, Prague, Berlin, Elche, Utrecht, Paris, Rome and Istanbul, as well as in the conferences and meetings of BDMM and AFRM in Bulgaria – Sofia, Ruse, Velingrad, Narechen, Pavel Banya, Pomorie, Dryanovo and others.

Dr. Todorov is an established international lecturer with training courses and seminars in Australia, South Korea, Thailand, Great Britain, Turkey, Czech Republic, Slovakia and others.

1.4. Language skills

He is fluent in English, and at intermediate level – German and Russian.

2. General assessment of the applicant's research and applied activities.

For this competition Dr. Todorov presents 41 scientific papers, all full-text publications. He also has a monography and an abstract related to dissertation, the latter not included in the submitted reference for participation in this competition.

Dr. Todorov is the first author in 9 publications (22%), second – in 16 publications (39%).

On 3 of the publications is the only author.

In total, the current scientific output of Dr. Todorov is 47 articles with a total volume of more over 300 pages.

Since 2010 the candidate is an expert in the clinical study of Bayer SPINART, elected member of the Steering Committee. The results of the survey are currently confidential.

3. Characteristics and contributions of scientific publications

3.1. Structure by main issues

Dr. Todorov's scientific publications cover the fields of Manual medicine, electric therapy, disc disease, balneotherapy, post-stroke rehabilitation, plexus brachialis pathology, Parkinson's disease, high-energy LASERS, as follows:

- Manual medicine – monograph and publications N:N: 1, 2, 3, 4, 5, 10, 11, 12, 14, 15, 17, 18, 19, 22, 25, 26, 28;
- Clinical Physiotherapy - monograph and publications N:N: 6, 7, 8, 9, 13, 14, 15, 16, 20, 21, 22, 23, 24, 27, 29, 30-41;
- Clinical methodology - monograph and publications N:N: 8, 10, 11, 16, 17, 25, 26, 31, 32, 36, 37;
- Neurological diseases (PNS and CNS) - publications N:N: 5, 6, 8, 9, 14, 16, 27, 29, 30, 34;
- Balneology – publication N: 21;
- High-technology performed physical factors - High-energy LASERS - publications N:N: 38, 40, 41.

The main scientific activity of Dr. Todorov is in the field of Manual Medicine, with which most of his postgraduate courses and specializations are related. He has worked intensively in the field of manual diagnostics and therapy of functional disorders of the sacroiliac joints, all regions of the spine and some muscles with frequent predispositions - m. piriformis, m. iliopsoas.

The functional pathology of the sacroiliac joints (SIJ) is one of the poorly studied areas in specialized Bulgarian science. It is here that Dr. Todorov has concentrated to the greatest extent, as 7 of the publications concern precisely these joints, and 2 of them are entirely personal. **A contribution** on a national level is the introduced as a method of verification to affect the function of SIS non-contact skin thermometry, introduced as a standard for influence verification. Based on known neurophysiological phenomena, Dr. Todorov has practically found an effective methodology for proving the effect of manual manipulations, i.e. functional normalization of local blood circulation. Using modern statistical methods for systematization of the results obtained, the methodology is fully proven from a scientific point of view and can be recommended for application as a method of verification in other scientific developments.

A manifestation of **innovative thinking** is the new test used in scientific development to study the function of the SIJ, namely the Rosina test. Dr. Todorov has studied the mentioned test in parallel with two of the popular functional tests for SIJ investigation, which allows comparability of the clinical accuracy of the Rosina test, tracking the clinical reliability of all three tests used.

When it comes to SIJ pathology in particular, the availability of multiple diagnostic tests is often confusing for physicians, the results divergated and their interpretation particularly is difficult.

Not only in Bulgaria, but also in Europe, studies of the clinical reliability of diagnostic tests are rare, and the benefit of the presented is obvious.

A contribution is also the study of the clinical reliability of some manual diagnostic tests applied immediately after manual therapy/manipulation. These kind of researches are missing not only in Bulgaria, but also in Europe. The interpretation of a testing immediately after manipulation is delicate, having in mind the need of time for reflex changes to occur.

The results from this original study are reliable enough based on the large examined cases – 120 patients with 128 affected joints. This gives a ground for valuable conclusions for practice from the obtained data, statistically verified. The parallel follow-up of the Rosina test by Dr. Todorov in the group of tests under consideration brings additional clarity regarding its application as new to Bulgarian practice.

In the scientific article "*Modern tests for the diagnosis of blockages in the SIJ*" a in-depth clinical and functional analysis of this pathology has been made. The author reasonably divides the mentioned tests into two groups - specific and non-specific. Such classification is being done for the first time not only in our country, but also in Europe.

Dr. Todorov also presented his interesting studies related to cervical and cervicocranial blockages causing cervicocranial syndrome with its clinically most significant manifestation - cervicocranial headache. According to literature data, its weight as a cause of headache of a different nature reached 40-45%. In the study, the author used not only manual manipulations, but also other completely atraumatic manual techniques - mobilization, traction, postisometric relaxation, etc. similar techniques.

Manual manipulations in the cervico-cranial segment, also known as the "parade region" are among the most difficult techniques to perform due to the high anatomical risk of the region.

In his scientific work, Dr. Todorov also focuses on some rarer and less well-known syndromes, such as Tietze's syndrome and thoracolumbar transition syndrome, which therefore are often the cause of many diagnostic mistakes.

The thoracolumbar transition is a kinesiologicaly vulnerable area of the spine, often going out in dysfunction. It is reflexively linked to a many locuses whose underestimation in the diagnostic is a serious mistake. The author in detail presents the syndrome, makes clear, unambiguous connections between the clinic, pathogenesis and differential diagnostics.

Tietze syndrome is much less common. The unclear pathogenesis and the clinic resembling other diseases are a frequent reason for failures in the routine. Available information and research on the syndrome has been collected and summarized in the presented scientific article. The etiology is explained and the most successful methods for influencing the disease are presented. An interesting **hypothesis** regarding the reflex relationship of the manifestation of this syndrome with functional blockages of ribs and costotransverse joints in the thoracic part has been introduced.

The study of 44 patients with spastic m. iliopsoas and their treatment with postisometric relaxation (PIR) proves the significant superiority of the methodology compared to conventional therapy with non-steroidal anti-inflammatory drugs (NSAIDs). The diagnosis without the need for imaging and the effectiveness of the therapeutic methodology without the help of medication is practically accessible and extremely profitable economically. The work represents a **contribution** to the field of myopathology and manual medicine.

The isolated pathology of m. piriformis was studied in 36 patients. The observed treatment methodology includes eliminating of existing blockages followed from PIR application. The excellent therapeutic results confirm the effectiveness of PIR in spastic myositis of a similar origin. The presented overviews on the subject and the essence of manual medicine are from important practical meaning, seeking to answer current questions from the routine with revealing the modern abroad experience in the field. A separate overview of the term "blockage", often used incorrectly, is made, too. Detailed explanations are preceded by a review of all accessible hypotheses about the origin of the blockage and its mechanisms.

The question of the legitimate performing of manual therapy - highly specialized medical activity of physical and rehabilitation medicine, is extremely actual due to the serious complications that can arise from improperly conducted manual manipulation by unqualified persons/specialists - acute disc herniation, acute peripheral paresis, rib fracture, spinal cord injury.

That is why, in the article, a comprehensive review of central and peripheral functional disorders and spondylogenic complaints indicated for manual therapy is made. Thus the article could be applicable in various training courses.

*Dr. Todorov also participated in the pre-print preparation of the textbook "Manual Medicine - diagnosis and therapy" with author Assoc. T. Todorov, published in 2005.

3.2.2. Another area of Dr. Todorov's active scientific attention is the disc disease. Although exploited in the scientific developments of many authors from different clinical fields, the two presented review articles from 2006 and 2012 consider disc pathology in terms of, on the one hand, the overall possibilities of most known physical factors to influence it, and on the other, as a cause of radicular syndromes.

Of interest is the separate consideration of the accompanying dysfunction as segmental articular and segmental muscle one. Such detailing additionally contributes the goals of rehabilitation and methods of impact, emphasizing again the possibilities of manual therapy.

3.2.3. Problems of clinical physiotherapy and methodology

A good impression is made by the scientific collaboration with a foreign specialist in the face of Dr. Christian Mucha – lecturer at the German Higher Sports School – Cologne, Germany. In his co-authorship, Dr. Todorov has 4 joint publications, which is an example of a long-term cooperation and good teamwork. Each of the four publications concerns a different topical pathology, the results obtained and their conclusions being **scientific contributions**.

The high-level equipment of the German University made possible many modern methods for research and verification to be used - computerized pedobarometry (Dyno-Graphy-System /CDG/), venous plethysmography, devices for home electro-stimulation, EMG feedback apparatus for registration of innervation potentials, etc.

Special attention deserves the scientific material of the candidate, on recovery after operative reconstruction of anterior cruciate ligament of the knee. The tone and functional ability of the quadriceps femoris muscle is commonly used as a benchmark for successful rehabilitation and is the focus of the study. The implementation of a consistent 12-week rehabilitation program and the use of electrostimulation devices for home are, unfortunately not widely ensured in Bulgaria. In this regard, the existing German experience can be successfully used as a model.

With this study, Dr. Todorov outlines a modern trend in the rehabilitation of reconstructed anterior cruciate ligament and can successfully be defined as an **innovator** in this field of rehabilitation medicine for Bulgaria. Enrichment of classical active kinesitherapy with functional electrical stimulation (FES) within 6 weeks significantly accelerates recovery of motor deficits. The implementation of this methodology in practical activity is a matter of the future of the specialty. The publication concerning the podometric distribution of pressure in patients with lumbar radicular syndromes (LRS), an obvious but hitherto unexplored pathology in the gait disorder in our country, is also of a **contributing** nature.

Therefore, the main goal of the rehabilitation phase of treatment is to achieve a stable functional balance. The results obtained by the authors provide an additional direction of thinking when compiling the rehabilitation program for patients with LRS.

Another interesting aspect of Dr. Todorov and team's research is the effect of low-frequency electrical stimulation on regional blood perfusion in patients with brachial plexus paresis.

For the purposes of the study, motorcyclists who suffered an accident after plastic reconstructive surgery were selected. The focus of the study is on the importance of the properly parameters for electrostimulation, which directly correlates with the therapeutic outcome.

The **latest** joint study of Dr. Todorov and Dr. Mucha (Cologne, Germany) is devoted to the effect of cryotherapy on blood perfusion observed in healthy individuals. The objectifying method chosen by the authors - obturative venous plethysmography is a widely recognized measuring method for registration and assessment of the segmentar behavior of blood circulation.

Bearing in mind the complex neuro-regulatory mechanisms of thermoregulation, it would be good to study the behavior in the reactivity of other areas of the human body in order to define conclusions about the mechanisms of action of cryotherapy – a widely applicable method in rehabilitation practice. In similar studies carried out in Europe so far, the results are of a contradictory nature.

3.2.4. Studies related to socially significant pathology

A particularly interesting issue of spontaneous disc herniation in patients with the socially significant diseases - multiple sclerosis, was studied by Dr. Todorov in a team with neurologists and radiologists in another of his scientific publications. The thesis of the predisposition of this systemic disease to comorbidity is supported, which is particularly important because of the combined worsening of the prognosis and quality of life of the patients.

Also interesting for practice is Dr. Todorov's research, again in a multidisciplinary team with neurologists, on the effect of decimetric waves in patients with Parkinson's disease for drug therapy reducing. The results of the study in a group of 12 patients indicate the successful achievement of this goal, which provides a new perspective in the maintenance treatment of this disabling disease.

Functional recovery of post-stroke hemiparesis is a problem of undiminished relevance, especially nowadays alongside of the initiative of a "National Stroke Plan" establishment. The contribution of the team in which Dr. Todorov participates focusing on this, is the introduction of the modified Rankin scale as a method for evaluating the results of the rehabilitation.

In recent years, scientific developments in the field of balneotherapy are rare. Therefore, the study of the effect of the application of geothermal water from the R-119X spring in the city of Varna by patients with wide-spread degenerative joint diseases - gonarthrosis, coxarthrosis, spondylarthrosis, etc. could be distinguished by its actuality. The excellent results for pain reducing are a recent proof of the effectiveness of balneotherapy and is the ground for authors to underline the need for organized balneoprophylaxis at national level. For the indicated source, the study can be qualified as a **real scientific contribution**.

3.2.5. Studies concerning high-tech preformed physical factors

In recent years, high-energy LASER devices – a modern physical factor have shown an extremely effectiveness in rehabilitation routine. The studies in which Dr. Todorov participated together with his PhD students represent an excellent source of information in this direction. The study of the combined application of manual therapy and a high-energy LASER system is unique in Bulgaria so far and has a **contribution value**.

4. Contributions of an original nature

4.1. Unique publications for the national scientific literature:

- scientific research proving as an effective verification method the non-contact infrared skin thermometry for patients with functional pathology of SIJ;
- data proving the good effect on Parkinson's disease from decimeter wave therapy;
- for the first time in Bulgaria, a division of manual diagnostic tests for SIJ into specific and non-specific has been carried out, and the final correlation of such a division with the established results has been proven;
- data on plantar pressure distribution in patients with lumbar root compression syndromes;
- data on the effectiveness and clinical reliability of the Rosina test verified in 2 scientific researches;

- data from a scientific study establishing FES as an integral part of rehabilitation after reconstructive operations in connection with anteromedial knee instability;

4.2. For the first time in Bulgaria have been studied:

- the influence of local cryotherapy on the lower leg muscle and skin blood circulation;
- the application of manual therapy and PIR in cases with piriformis muscle syndrome;
- the application of manual therapy and PIR in cases with iliopsoas muscle syndrome;
- the effect of the application of geothermal water from spring R-119X in Varna in patients with frequent degenerative joint diseases;
- the effectiveness of the combined application of high-energy LASER and manual therapy in functional disorders of the thoracic region.

4.3. Scientifically applied contributions:

- development and validation of a diagnostic approach to identify dysfunctions of the sacroiliac joint;
- introduction of the modified Rankine scale as a method for assessing the functional recovery after rehabilitation in post-stroke hemipareses;
- development and validation of specific protocols for working with a high-energy LASER;
- in cases of peritendinitis of the glenohumeral joint and functional disorders in the thoracic vertebral segment.

5. Significance of contributions to science and practice

The above facts can be considered as proved with the contributions of Dr. Todorov's scientific work. Particularly prominent are the developments in the field of Manual Medicine, as well as his teamwork with foreign and Bulgarian specialists in the fields of electrotherapy, disc disease, postoperative rehabilitation, Parkinson's disease, high-energy LASERS, etc.

These contributions, as well as the fully relevance to the minimal national and residential university requirements, meet completely the requirements for occupying the academic position of "Associate Professor".

5.1. Citations

According to the applied reference – 18 real citations, 4 of which in reviewed monographs and specialized editions.

6. Evaluation of diagnostic and therapeutic activity

Dr. Todorov is Head of Physical Medicine and Rehabilitation Clinic at the Heart and Brain Hospital, providing a full value therapy and diagnostic process, control, contribution and adjustment of the treatment plans of in-patients of the hospital. As a doctor – head of clinic, he conducts regular main visitations and consultations.

The good collaboration with teams of colleagues from other universities and hospitals, as well as with specialists from other disciplines such as neurologists, vascular surgeons, orthopedists, etc. – multidisciplinary collaboration, figure out a high-level execution of this quality indicator.

7. Evaluation of teaching activities

Dr. Todorov has a reach teaching experience.

He conducted lecture and practical training in Physical and Rehabilitation Medicine to students of Medicine IV year, nurses, midwives and rehabilitators at the Medical University – Varna in the period 2007 – 2019.

He has conducted training in English for foreign students studying at the Medical University of Varna. He have been prepared curricula and examination tests in English.

He has actively participated in examination committees of all kinds – semester exams, for specialization, for doctoral studies, corrections.

Dr. Todorov is the main author of the Master's degree programme "Rehabilitation, Thalassotherapy, Wellness and SPA", for which the Medical University of Varna was awarded with an international award and the mentioned program continues to be one of the most successful for Varna University at present and the only possibility for advanced education for professional bachelors in specialty „rehabilitator (physiotherapist)“ .

Conclusion:

In view of the above facts, I strongly support the award to Dr. Iliya Todorov Todorov of the academic position "Associate Professor" in the professional field of Medicine, in the scientific specialty "Physiotherapy, Resortology and Rehabilitation" at the University "Prof. Dr. Asen Zlatarov" – Burgas.

Sofia
17 June 2024

Member of the scientific jury:

Assoc. Prof. Dr. L. Vesselinova, MD, PhD