J Rehabil Med 2019; 51: 828–833

SPECIAL REPORT

FOSTERING THE HIGHEST EDUCATIONAL STANDARDS IN PHYSICAL AND REHABILITATION MEDICINE: THE EUROPEAN PRM BOARD STRATEGY FOR ENSURING OVERALL QUALITY OF REHABILITATION EDUCATION AND CARE

Nikolaos BAROTSIS, MD[1A], Franco FRANCHIGNONI, MD[2B], Rolf FRISCHKNECHT, MD[3B], Alvydas JUOCEVICIUS, MD, PhD[4B], Angela McNAMARA, MD[5B], Xanthi MICHAIL, MD, PhD[6B], Guy VANDERSTRAETEN, MD, PhD[7B], Jean-Michel VITON, MD, PhD[8B] and Maria Gabriella CERAVOLO, MD, PhD[9C]

From the [1]Department of Rehabilitation Medicine, Patras University Hospital, Rion, Greece, [2]ICS Maugeri, IRCCS, Physical Medicine & Rehabilitation Unit of Lissone Institute (MB), Lissone, Italy, [3]Centre for Physical and Rehabilitation Medicine, Lausanne University Hospital, Lausanne, Switzerland, [4]Vilnius university hospital Santaros Klinikos (PRM Center) – Faculty of Health Sciences Klaipėda University, Klaipėda, Vilnius, Lithuania, [5]National Rehabilitation and Mater University Hospitals, Dublin, Ireland, [6]University of West Attika, Athens, Greece, [7]Department of Physical and Rehabilitation Medicine, Ghent University Hospital, Ghent, Belgium, [8]Department of PRM, University Hospital La Timone, AP-HM, Faculty of Medical and Paramedical Sciences, Aix-Marseille University, Marseille, France, and [9]Department of Experimental and Clinical Medicine, Politecnica delle Marche University, Ancona, Italy

The harmonization of staff education is a key element for ensuring the highest standard of rehabilitation care across Europe. With this aim, the European Union of Medical Specialists (UEMS) has created a Common Training Framework, which consists of a common set of knowledge, skills and competencies for postgraduate medical training. As a body linked to the Physical and Rehabilitation (PRM) Section of the UEMS, the European PRM Board is committed to promoting the harmonization of PRM physicians' qualifications. The European PRM Board accomplishes this mission, not only by determining the theoretical knowledge necessary for the practice of the PRM specialty, and the core competencies (training outcomes) to be achieved at the end of training, but also by ascertaining that a standard level of education is achieved and maintained by PRM physicians, through a medically driven system of certification. This paper provides an overview of the methodology and outcomes of the European PRM Board examination, while showing how the approach to PRM education should be considered as a reference point by scientific societies, higher education institutions, health policymakers, patients' associations, and all the other bodies caring for high-quality rehabilitation provision to disabled people, at the national and European level.

Key words: medical education; physical and rehabilitation medicine; postgraduate training; European Union of Medical Specialties; White Book; European training requirements.

Accepted Oct 22, 2019; Epub ahead of print Oct 27, 2019

J Rehabil Med 2019; 51: 828–833

Correspondence address: Maria Gabriella Ceravolo, Department of Experimental and Clinical Medicine – Politecnica delle Marche University, Ancona, Italy. Email: m.g.ceravolo@univpm.it

LAY ABSTRACT

The European Union of Medical Specialists (UEMS) has created a Common Training Framework, which consists of a set of knowledge, skills and competencies for postgraduate medical training. As a body linked to the Physical and Rehabilitation (PRM) Section of the UEMS, the European PRM Board is committed to promoting the harmonization of PRM physicians' qualifications. It accomplishes this mission by determining the theoretical knowledge necessary for the practice of the PRM specialty and the core competencies, but also by ascertaining that a standard level of education is achieved and maintained by PRM physicians, through a medically driven system of certification. This paper presents the methodology and outcomes of the European PRM Board examination, while showing how this approach to PRM education should be considered as a reference point at the national and European level.

The European Union of Medical Specialists/Union Européenne des Médecins Spécialistes (UEMS) is a non-governmental organization representing national associations of medical specialists at the European level, which is committed to promoting the free movement of medical specialists across Europe, while ensuring the highest level of training, as the means to guarantee the quality of medical care and expertise. According to UEMS policy, the development of European Standards in education is warranted, so that, no matter where in Europe doctors are trained, they develop the same core competencies.

In 1994, the UEMS adopted its Charter on Postgraduate Training, aiming at providing recommendations at the European level for excellence in postgraduate medical training. Made up of 6 chapters, this Charter set the basis for the European approach in the field of postgraduate training. While 5 chapters were common to all specialties, so-called "Chapter 6" was intended to be completed by each Specialist Section according to the specific requirements for the practice of their discipline.

[A]Incoming President of the UEMS PRM Board 2021–2024.
[B]Past Presidents of the UEMS PRM Board 2002–2016.
[C]President of the UEMS PRM Board 2017–2020.

doi: 10.2340/16501977-2620

The present paper provides an overview of the several activities recognized by the UEMS Section and Board in Physical and Rehabilitation Medicine (PRM). These are designed to achieve the goal of harmonizing postgraduate PRM education as the main strategy to increase the quality of rehabilitation care and rehabilitation service organizations across all European Union member countries.

THE EUROPEAN UNION AND THE NEED FOR HARMONIZATION OF MEDICAL TRAINING

The unified discipline of PRM, as we know it today, emerged gradually in Europe at the time of development of the European Economic Community (currently the European Union).

Historically, the development of many domains of the specialty can be traced back to the 19th century, although some methods of treatment still in use are far older. After the Second World War, the speed of development of the discipline was boosted by the needs of the tremendous number of civil and military war casualties, the increase in prevalence of chronic disabling diseases, and a change in how disability and disabled people were perceived by society (social responsibility, human rights issues, financial burden, etc.). New rehabilitation approaches developed by the discipline started to benefit patients surviving spinal or musculoskeletal injuries, and those with limb amputations or sequelae from congenital and acquired brain lesions. At that time, PRM did not officially exist in various European countries and was known by other names.

The UEMS was founded in 1958, and based on the need to harmonize the training and qualifications of medical specialists, in order to ensure that the free circulation of doctors within Europe would guarantee the highest levels of healthcare in all countries (1). During the 1960s, with the collaborative work of doctors from different European countries who were active in the field of Physical and Rehabilitation Medicine, 3 European PRM bodies were founded, with the aim of developing and strengthening this medical specialty. One of these was the mono-specialist Section of PRM of the UEMS.

To achieve their goals, the PRM Section worked to establish:

- a precise definition of the specialty;
- use of PRM as the name of the specialty in all European countries;
- definition of the role of the PRM specialists in disability and healthcare;
- provision of indications for excellence in postgraduate training and continuous education of PRM doctors; and
- preparation of inventories of the university and non-university centres offering training in the specialty of PRM in Europe (2).

Important milestones achieved by the Section, in the first 20 years of activity (1971–1991), included a presentation in 1981 at the Commission of the European Communities. This was a document defining the specialty, giving indications for PRM teaching and training in the member countries, and outlining the role of the PRM physician. In 1988, a document entitled: "The role of doctors specializing in PRM in the assessment of disabilities for social and professional re-integration" was approved. The first *White Book* of PRM was published in 1989.

A Foundation named "Collège Européen de Médecine Physique et de Réadaptation" was created in 1991 under statute and registered in The Hague. The objectives of this body were amongst others: (*i*) to ensure optimal care at a similar level in terms of rehabilitation for the patients in all European countries; (*ii*) to work towards the harmonization of PRM education and training in European countries; (*iii*) to promote the highest possible level for training and care in PRM. To enable the Foundation to work very closely with the UEMS PRM Section, the assembly of the delegates of the UEMS PRM Section was established as the general assembly of the Foundation.

ORGANIZATION AND MISSION OF THE UEMS PRM BOARD

Over the years, the College became functionally known as the European Board of PRM. The relationship between this Board and the PRM Section of the UEMS was very close (3). The Board took all the responsibilities of the Section's educational affairs, functioning as the educational committee of the Section, and adopted the name "PRM Board of the UEMS".

Each UEMS member country is allowed to appoint 2 delegates to the PRM Board, which meets twice a year. A preparatory workshop of the Board delegates always precedes the General Assemblies of the UEMS PRM Board and Section, where all final decisions and elections are taken, with each member country casting one vote.

For each member country one of the delegates serves as the National Manager and is the liaison for the certification activities of the Board at the National level. The Board conducts the certification of Fellows, Trainers, Training Centers and the accreditation of educational events in the field of PRM "(in collaboration with the European Accreditation Council for Continuing Medical Education [EACCME] of the UEMS). All

these activities are coordinated and supervised by the Jury of the Board. There are several other committees involved in the examination process, including those responsible for building and updating the examination bank of questions, the training requirements, the curriculum and the logbook.

The Board is an active member of the Council for European Specialists Medical Assessment (CESMA), an advisory body of the UEMS, whose purpose is to provide recommendations and advice on the organization of European examinations for medical specialists at the European level. It is also a member of the European Accreditation Council for continuing medical education of UEMS (EACCME), functioning as the assessor of the quality and credits of educational events in the field of PRM, as mentioned above.

HARMONIZATION OF PRM TRAINING

As reported extensively in the *White Book 3rd edition* (4), the duration of PRM training and contents of training curricula still present differences throughout Europe. In order to support the widespread adoption of standards in PRM education, the UEMS PRM Board established a curriculum of theoretical knowledge in its very first year of activity, in 1991. The curriculum was updated in 2011 and further revised in 2018 as an annex to the European Training Requirements (ETR) in PRM (5). ETRs have replaced chapter 6 of the old charter on training of medical specialists in the European Community (6). The publication of the ETR, elaborated by the PRM Board and endorsed by the UEMS Council in 2018, is one of the most important recent steps towards the harmonization of PRM education in Europe. The document defines the content of the training and the standards for training centres, trainers and training programmes in PRM. A new educational model for medical trainees has been introduced, based on applied clinical knowledge and skills. The final evaluation is based on the level of competencies a resident/trainee must achieve by the end of their training programme to be fit for independent

Table I. Structure and contents of the curriculum of knowledge in Physical and Rehabilitation Medicine across different editions of the documents published by the European PRM Board. The 2018 edition of the curriculum is integrated into the European Training Requirement in PRM. Similar colour enhancement indicates possible correspondence between contents from different editions

1991	2011	2018
Fourteen chapters divided into 76 Sub-chapters	Five sections divided into 68 Chapters	Nine chapters divided into 140 Learning Units
Introduction: Philosophy, Objectives and Methodology of Physical and Rehabilitation Medicine	A. Topics of General Interest in PRM Including: Field of competence, Main health interventions in PRM, Specific interventions in PRM, PRM and sport and expanding the issues of: • PRM and International Classification of Functioning, Disability and Health; • Outcome Measurement in PRM; • Quality of Life (QOL) Assessment in PRM; • Role of Complementary/Alternative medicine in PRM	
Chapter 1 – The fundamentals of PRM		Chapter 1 – The fundamentals of PRM
Chapter 2 – Physiology and basic physiopathology		Chapter 2 – Body structures and body functions
Chapter 3 – Clinical and functional assessment in PRM		Chapter 3 – Clinical diagnosis and functional assessment in PRM
Chapter 4 – Therapies in PRM		Chapter 4 – Interventions in PRM
Chapter 5 – The immobile patient.		Chapter 5 – Rehabilitation approaches to disease-specific disabilities Including: the immobile patient, disability conditions related to Nervous, Musculoskeletal, Pain, Respiratory, Cardiovascular, Urogenital disorders, Cancer and Burns
Chapter 6 – Adult locomotor system pathology in PRM.		
Chapter 7 – PRM and sport		
Chapter 8 – PRM in nervous system pathology	B. PRM and Disorders of Nervous System	
Chapter 9 – PRM and respiratory pathology.	C. PRM and Orthopaedic and Musculoskeletal Disorders	
Chapter 10 – PRM and cardiovascular pathology.	D. PRM in Other Specific Disabling Conditions (including the Immobile patient, Respiratory, Cardiovascular, Urogenital disorders, Cancer and Pain disorders, Children and Elderly disabling conditions)	Chapter 6 – PRM approach to disabling conditions in the elderly
Chapter 11 – PRM in paediatric conditions		Chapter 7 – PRM approach to disabling conditions in children
Chapter 12 – PRM in urological and sexual problems		
Chapter 13 – PRM in geriatric conditions		
Chapter 14 – The reintegration of disabled people, the maintenance of disabled and elderly people at home	E. Integrative and Clinical Rehabilitation Sciences, expanding the issues: • Services Research, Comprehensive PRM Intervention Research, Clinical research on best care including guidelines, organization, coordination, and education, • Administration and Management, Standards and guidelines for the provision of best care (including Evidence Based Medicine), Quality management, • Scientific education and training of professionals, Development and evaluation of the PRM team and multidisciplinary care, • Community-based rehabilitation issues, Networks and pathways in PRM	Chapter 8 – Research in rehabilitation Chapter 9 – Integrative and clinical rehabilitation sciences

practice of PRM. Table I illustrates the evolution of the main structure and contents of the PRM curriculum of knowledge across different editions.

CONDITIONAL ENDORSEMENT OF TRAINING PROGRAMMES

The number of PRM trainees and specialists varies significantly among European countries (7), in some of which the specialty does not officially exist. The Board has elaborated a set of requirements for the conditional endorsement of PRM training programmes for European countries in which the specialty of Physical and Rehabilitation Medicine is under development. Following the proposed scheme, the national health authorities or PRM-related medical societies can organize the training according to the high European quality standards set by the European PRM Board. The procedure, which is under the supervision of the Board, leads to the certification of training centres, trainers and fellows upon its completion.

THE FELLOWSHIP DIPLOMA

The Diploma of the European PRM Board Fellowship is a seal of excellence in the specialty of PRM and proof that the training of PRM physicians was carried out according to the European Standards for medical training in PRM. The Fellowship of the European Board of PRM is granted to physicians who have been trained and licensed to practice PRM in a member country of the UEMS and have successfully passed the European examination in PRM. To date, 3 countries (Slovenia, Switzerland and Belgium) have adopted the European PRM Board examination as part of their national qualification system in the specialty of PRM.

As an alternative, the Fellowship is also granted "by Equivalence" to senior PRM doctors who:

- hold a valid qualification as medical specialists in PRM, issued by a competent authority of a UEMS full member country;
- have been practicing the medical specialty of PRM in a UEMS member country for at least 7 years at the time of the application;
- can document 250 Continuing Medical Education/Continuing Professional Development (CME/CPD) credits collected during the 5 years preceding the application;
- can document a satisfactory degree of clinical, educative and research activities in the field of PRM (e.g. as an independent PRM physician, as a leader of a multi-professional rehabilitation team for in- or out-patients, as a trainer for PRM trainees, as a teacher of PRM subjects in medical schools and PRM training centres, publications, etc.). Activities in professional PRM organizations and patients' organizations may also be taken into account.

Over the last 25 years, approximately 1,800 PRM specialists have been Board certified by Equivalence and 1,200 by Examination.

HISTORY OF THE EXAMINATION

The first examination was held in Ghent, in 1993, with applicants from 6 pioneer countries. Within a few years, an increasing number of European countries joined, and nowadays the examination is delivered in approximately 18 countries each year (Fig. 1).

The date, starting time and duration of the examination is the same for all participating countries. The examination is scheduled once annually, at the end of autumn. Several organizational changes have taken place in the last 25 years. Starting from 2007 the submission of applications and the management of registrations for the examination have been conducted electronically, through an internet-based system. Further improvements in the handling of examination material occurred in 2012, and advances in statistical processing of the results, implemented in 2017, led to a significant decrease in the time required to release the results. Moreover, these changes allowed the Jury to provide detailed feedback on each candidate's absolute and relative performance. Until 2017, the examination was exclusively paper-based. In 2018 a small number of countries delivered a computer-based version of the examination. Starting from 2019 the examination

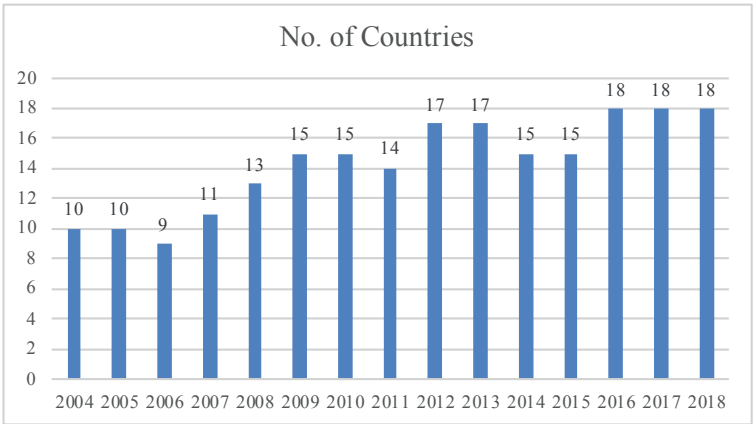

Fig. 1. Number of countries that organized the European PRM Board examination, during 2004–2018. Prior to 2004 the numbers ranged between 6 and 10.

will be computer-based for all participating countries. The aim is to comply with the international standards set by the Council for European Specialists Medical Assessment (CESMA) (8) for the delivery of medical examinations, including enhanced security, faster processing of results, advanced statistics and the provision of detailed feedback to examinees. The Jury of the European PRM Board, which is responsible for the examination procedure, constantly monitors the quality of the examination procedure, from the registration of candidates to the delivery of results. Both national managers and candidates participate in the quality assessment of the examination, through specially designed surveys.

PREPARATION OF THE EXAMINATION

The examination comprises 100 multiple-choice questions (MCQs), extracted from a data-bank, that currently includes approximately 1,500 questions. Selected experts, who are members of the Question Bank Committee, regularly update and expand the data-bank. Their duties include assessment of the MCQs submitted to the Board by National Managers and other colleagues and preparation of new questions based on the previously mentioned curriculum of knowledge established by the Board. The objective is to accumulate a large choice of MCQs on all the different topics of the curriculum, so as to offer to the candidates a balanced assessment of knowledge relevant to the practice of PRM. In the past, the questionnaire was typically composed of 80 single MCQs and 4 clinical cases, each with 5 MCQs. In recent years, the number of clinical cases has increased gradually in an attempt to provide an assessment focused on clinical reasoning.

ORGANIZATION OF THE EUROPEAN EXAMINATION IN PRM

According to the internal rules of procedures, the President of the Board, who is the Examination Director, with the secretarial support provided by the Certification Secretary General, supervises the entire examination process. The Jury of the Board is responsible for processing the results. A critical task of this committee is to assess the quality of the examination, evaluate the level of difficulty, statistically analyse the results and address eventual problems related to the examination procedure, in order to define the cut-off score. To ensure that the procedure is free of any potential bias, the results are presented to the Jury in absolute anonymity. The status of European/UEMS PRM Board Fellow is offered to those candidates who have passed the examination, after achieving the status of PRM specialist at the national level. Since 1993, a total of 1,232 PRM doctors have passed the European PRM Board examination. The rate of pass/fail varied throughout the years; in particular, the enrolment of an increasing number of applicants, coming from countries where the specialty is not yet fully developed, has corresponded to a slight increase in the failure rate, as indicated in Fig. 2.

FUTURE DEVELOPMENTS

Adherence to the guidelines of the UEMS-CESMA is a priority for the UEMS PRM Board. The procedures related to the creation of MCQs, the delivery of the examination, processing and statistical analysis of results are constantly updated so as to comply with international standards in medical qualification assessment. The traditional paper-based examination is currently being replaced by a computer-based examination. The methodology adopted to appraise the results of the examination will be based on the modified Angoff score (9), which uses a systematic and documented approach to establish defensible pass/fail scores, i.e. to ensure both the validity (the test measures what the students are expected to know) and the reliability (the test produces consistent results time after time) of the examination.

Moreover, in order to increase the validity, a stronger link has been established between the educational opportunities for trainees and the examination content. Initiatives to support education and training in PRM, also via an electronic education platform, have

Fig. 2. Pass rates of the European PRM Board examination, during 2004–2018.

always been a top priority in the action plans of the UEMS PRM Board (10). Scientific and financial support for the participation of trainees in selected PRM educational events, support for scientific publications in the field of PRM, special sessions dedicated to trainees at congresses, and e-learning resources (e-books, online courses, etc.) are among the actions regularly undertaken by the UEMS PRM Board in order to assist and support candidates in their preparation for the fellowship examination.

The aim is to provide valid and reliable high-quality European examination for the certification of young specialists in PRM. The long tradition and expertise of the UEMS PRM Board guarantee that the diploma of fellowship is a seal of excellence in PRM.

REFERENCES

1. Kiekens C, Moyaert M, Ceravolo MG, Moslavac S, Juocevicius A, Christodoulou N, et al. Education of physical and rehabilitation medicine specialists across Europe: a call for harmonization. Eur J Phys Rehabil Med 2016; 52: 881–886.
2. Bardot A, Tonazzi A. European physical and rehabilitation medicine organisms – origins and developments. Eur Medicophysica 2007; 43: 185–194.
3. European Physical and Rehabilitation Medicine Bodies Alliance. White Book on Physical and Rehabilitation Medicine (PRM) in Europe. Chapter 4. History of the specialty: where PRM comes from. Eur J Phys Rehabil Med 2018; 54: 186–197.
4. European Physical and Rehabilitation Medicine Bodies Alliance. White Book on Physical and Rehabilitation Medicine (PRM) in Europe. Chapter 9. Education and continuous professional development: shaping the future of PRM. Eur J Phys Rehabil Med 2018; 54: 279–286.
5. Training Requirements for the Specialty of Physical and Rehabilitation Medicine. European Standards of Postgraduate Medical Specialist Training. UEMS; 2018 [cited 2019 Sep 7]. Available from: https: //www.uems.eu/__data/assets/pdf_file/0010/64396/UEMS-2018.15-Council-Marrakesh-European-Training-Requirement-PRM-specialty.pdf.
6. Charter on training of medical specialists in the European community. UEMS; 1993 [cited 2019 Sep 8]. Available from: https: //www.uems.eu/__data/assets/pdf_file/0011/1415/906.pdf.
7. European Physical and Rehabilitation Medicine Bodies Alliance. White Book on Physical and Rehabilitation Medicine (PRM) in Europe. Chapter 5. The PRM organizations in Europe: structure and activities. Eur J Phys Rehabil Med 2018; 54: 198–213.
8. UEMS-CESMA Guideline for the organisation of European postgraduate medical assessments. UEMS 2015/16 [cited 2019 Sep 29]. Available from: https: //www.uems.eu/__data/assets/pdf_file/0018/24912/UEMS-CESMA-Guideline-for-the-organisation-of-European-postgraduate-medical-assessments-Final.pdf.
9. Ricker K. Setting cut-scores: a critical review of the Angoff and modified Angoff methods. Alberta J Educ Res 2006; 52: 53–64.
10. Viton JM, Franchignoni F, Vanderstraeten G, Michail X, Delarque A. Action plan of the Physical and Rehabilitation Medicine Board. Eur J Phys Rehabil Med 2009; 45: 271–274.