

# Investigação em Medicina Física e Reabilitação: Aspectos Actuais

## Research in Physical Medicine and Rehabilitation (PRM): Current Aspects

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### Introduction

Research in rehabilitation is a multidisciplinary field that focuses on the assessment, treatment, and support of individuals with disabilities, activity limitations, and participation restrictions, with the aim of improving their functionality and quality of life.<sup>1</sup>

Science and research in PRM are relatively young, like the specialty, and have some peculiar challenges and specificities.

The methodology of research in PRM bridges the gap between biology and behavior from cells to functioning (science is broader than biology).

This process of knowledge and decision-making usually tries to include three essential points: the best scientific evidence, clinical expertise, and the needs and wishes of patients.<sup>1</sup>

The article is organized with answers to different sensitive questions and expresses the opinions of the different authors.

### What are the main methodological characteristics of research?

We briefly present the main characteristics of the research in PRM.<sup>1-4</sup>

**Multidisciplinary approach:** Collaboration between healthcare professionals.

**Patient-centered focus:** Research aims to improve patients' functioning and quality of life.

**Outcome measures:** Evaluation of intervention effectiveness using measures like physical function, daily activities, quality of life, and pain.

**Randomized controlled trials (RCTs):** Gold standard for assessing intervention effectiveness by randomly assigning participants to different treatments and comparing outcomes.

**Longitudinal studies:** Tracking patients over time to understand the long-term effects of interventions and changes in functioning.

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Use of technology: Incorporating virtual reality, robotics, games, and wearable devices.

Ethical considerations: Addressing ethical concerns when studying vulnerable populations.

Translation to practice: Focusing on developing and testing interventions for real-world applications.

## Why is research important for a residency program?

In the context of residency in Physical and Rehabilitation Medicine, research assumes a critical role. It is crucial to acknowledge the inherent difficulty in incorporating research into the residency program, primarily due to its stark contrast with clinical practice and the challenges related to a national investigation structure, as well as the limited recognition of high-quality research in evaluation grids.

However, 4 main positive aspects of conducting clinical investigations during residency can be highlighted:

- Evidence-based medicine: Research provides a deeper understanding of various investigation types and the rationale behind their significance in evidence-based medicine. This knowledge is fundamental for making informed clinical decisions.
- Critical thinking: Participation in research cultivates critical thinking skills, especially in evaluating the scientific studies available for each topic. Residents develop the ability to question, scrutinize, and interpret data, which is invaluable in medical practice, considering the potential presence of critical methodological flaws in published scientific data and the constraints imposed by technology or patient conditions.
- Rehabilitation practices validation: Research plays a pivotal role in validating and consolidating the specialty of Physical and Rehabilitation Medicine. This contributes to strengthening its position within the broader medical field. The World Health Organization's Rehabilitation 2030 initiative underscores the importance of research in this domain.
- Alternative career path: Research offers an alternative career path for physicians, enabling them to contribute to the advancement of medicine in unique ways beyond clinical practice.

In conclusion, while research during residency presents challenges, it remains an indispensable component. It equips residents with essential skills and serves to fortify their specialty over the long term, ultimately benefiting the field of Physical and Rehabilitation Medicine.

## What is the reasonable weight of research in the final internship exam?

The residency program in PRM carries significant weight in a resident's training. It allows residents to acquire the essential skills needed to work within a multidisciplinary and multiprofessional healthcare team, ultimately leading to the attainment of specialist status. One aspect that cannot be overlooked during this professional journey is research. While article 24 of the "Diário da República" recognizes research as a pivotal factor in the internal medical residency regulation, neither this decree nor the specialty board defines the weekly time commitment to this important facet.

Within the field of PRM, evidence-based medicine remains a persistent challenge in research. When it comes to the final examination for the residency, the heterogeneity of research projects necessitates stringent criteria, including metrics such as the impact factor and quartile of the journal where an article is published.

However, the value attributed to research in the curricular evaluation appears to be notably low and calls for a prompt revision by the specialty board. It is imperative to establish clear guidelines during the residency and encourage all residents to strive for excellence even as we work towards creating better conditions for research.

The field of PRM is currently experiencing substantial growth and a promising future. In this journey, maintaining intellectual humility is crucial—teach what is known, practice what is taught, and inquire about what remains unknown. By doing so, we can contribute to the ongoing development of our specialty, ensuring that we provide the best possible care to our patients while advancing our understanding of the field.

## How to measure the quality of rehabilitation

Quality is the degree of excellence of something, or a measure of how good or bad something is when compared to other things of the same kind.<sup>5</sup>

On the other hand, quality in health care means treatment, prevention and supportive care that is effective in improving, maintaining, or slowing the deterioration of health now or in the future, or both and includes health promotion, disease prevention, treatment, rehabilitation, palliative care and more.<sup>6</sup>

The quality of medical care is based on evidence-based medicine (EBM) and the levels of the evidence pyramid provide a way to visualize both the quality of evidence and the amount of evidence available.<sup>7</sup>

EBM defines the efficacy and effectiveness of the treatments for all persons based on means and on statistical models and considers the global characteristics of the general population rather than of each person with its characteristics and comorbidities, and with specific contextual (personal and environmental) factors.<sup>8</sup>

In the majority of situations, EBM is not adequate for PRM, based on a comprehensive approach to Health and Health Conditions. PRM considers each and every person as a unique entity (tailored medicine).

The assessment quality in rehabilitation medicine may diverge from others because the main goals are quality of life and functionality. PRM methodology uses ICF: a biopsychosocial model that considers the relationship with physics and biology, genetics and individual history and social factors.<sup>5</sup> For a high-quality PRM service the PRM specialist must use a multifaceted psychosocial approach involving that specific individual with a health condition in her/his contextual factors, i.e., considering his roles and expectations, regardless of the psychological and physical impairments.

## Proposals for an increase in research in the specialty

Scientific education and research, along with professional training and practice, are dialectical areas, but at the same time synergistic, integrative and relevant for the development and dynamization of the specialty of Physical and Rehabilitation Medicine (PRM), with regard to scientific activity, the differentiation of technical-scientific and professional practices and holistic intervention in the PRM/Rehabilitation area of Health.

Scientific research creates direct value of “knowledge”, but also allows with it the improvement of Health Care provided to the population. The World Health Organization, in its guidelines, initiatives and action plans until 2030 and in the February 2023 General Assembly Declaration “Strengthening rehabilitation in health systems” defends the need for Research. The European institutions have declared their support for Rehabilitation, funding policies where the relevance of scientific research stands out, namely for Special

Interest Groups. The Scientific Societies of PRM, national (Portuguese Society of PRM-SPMFR) and internationals (European Society of PRM-ESPRM and International Society of PRM-ISPRM), support and promote Scientific Research in PRM.

Thus, the current challenges of science and research, as well as the specificities and trends in the area of PRM and Rehabilitation are very important to identify and must respond to the needs and the plan of care provision for the medical specialty and for its area of Health.

The increase of Scientific Research in PRM is imperative, and the knowledge, skills and competencies for research should be promoted, taught, developed and enhanced in PRM Residents and in PRM Specialists Physicians (including the skills of observation, questions and hypotheses formulation, of developing and applying valid methodologies with a decrease in subjectivity and an increase in PRM scientific research processes and procedures standardization, of data analysis, discussion, elaboration of conclusions and communication of results).

There are 11 basic strategic axes for the increase of Scientific Research in PRM (and the scientific potential of PRM institutions and their elements): 1. Training for scientific research in pre- and post-graduate Medical Education by the Academy, along with initiatives by the Scientific Societies and the Portuguese Medical Association /Order(in partnerships); 2. The Pre-graduate Medical Education of PRM; 3. Post-graduate Medical Education with the inclusion of research and scientific activity in the specific training program of PRM internship; 4. PRM Doctor's education and practice in scientific activity with multidisciplinary and multisectoral professionals; 5. The increase in PhDs in PRM and university professors in PRM, with the consequent pedagogical development in PRM; 6. The creation of PRM Research Units in the PRM services and institutions, with a responsible PRM Physician and their connection to the Research Centers of the Local Health Units of the National Health Service, Private Institutions and the Social Sector, the Academy, the Scientific Societies, the Professional Associations (such as the Medical Association/College) and the national and international Patient Associations; 7. Research technologies, artificial intelligence, innovation and entrepreneurship enhancers; 8. The design and implementation of scientific activities, partnership networks and multicenter studies between the Scientific Societies of PRM (national and international), the Public, Private and Social Sector Institutions of PRM, the Academy, the Technical Scientific Forum of the Portuguese Medical Association, the Patient Associations and the Stakeholders for PRM (such as companies); 9. The scientific research funds (and in PMR); 10. The strengthening of the link between PRM and translational research (from basic science to clinical science) and clinical research; 11. The creation and publication of Scientific and Clinical Guidelines and National PRM/Rehabilitation Protocols for various

pathologies and health conditions with temporary or permanent disability, limitation of activity and restriction of participation.

The following are considered basic and relevant for the guidance, regulation, enhancement and sustainability of the development of these 11 strategic axes: a) Ethics, with its fundamental principles and behaviors that guide actions; b) Basic sciences and clinical sciences; c) The creation of National PRM databases for the main pathologies and health conditions; d) Cooperation between the services of the public, private and social sector of PRM healthcare network and the Academy; e) PRM Research Units Accreditation; f) The financial and logistical support (national and international, namely European) and the information about them to the PRM community; g) The national and international communication and information PRM networks.

The mission of the PRM Research Units (with their intra and inter-institutional partnerships) is to promote PRM scientific culture, to encourage and create the conditions for the realization of quality and innovative research projects in the PRM Services and Institutions, with multi-professional, multidisciplinary and multisectoral teams (when in partnership with other services and institutions from different areas of knowledge). The Cochrane Definition of Rehabilitation for scientific and research purposes (with multi-professional teams) is an incentive for the development of multi-professional projects. The PRM Research Units should promote their collaboration with SPMFR, ESPRM, ISPRM, other national and international scientific societies and academic institutions, the Portuguese Medical Association (Colleges with technical-scientific functions and the recently created Technical-Scientific Forum of the Portuguese Medical Association with the Academy and the Scientific Medical Societies), Patient Associations and other Stakeholders. Portuguese PRM Research Projects must be included in research partnerships with other National and International Scientific and Research Institutions and Projects.

The PRM Research Units will have to develop their activities in a sustained, dimensioned, organized, networked and effective way in the use of resources, in response to needs and in the results obtained. Thus, they will contribute to the increase of scientific research in the specialty of PRM and in its area of Health, as well as to the improvement of the quality, safety, development and renewal of PRM healthcare provided to patients.

It is essential to demonstrate and disseminate that Scientific Research in PRM allows for “value added”: Progress and Application of knowledge for better Health in the 21st century!

## How to implement academic capacity in Portugal

a) The importance of Academic Capacity - The development of what is here called “Academic Capacity” is related to fundamental areas of knowledge, such as Education/ Training and Research. These realities are correlated. Without research, there is no progress. There is scientific evidence that services where research is carried out provide better quality care. The development of Academic Capacity is linked to multiple factors, which we will discuss later.

b) The Academic Life Cycle - The academic career should be viewed from a long-term perspective. It is divided into several phases, each one with its demands. Universities and academic centers are the places for those interested in pursuing this career. It is in this environment that excellence is sought, where the best scientists, clinicians and educators are. It is here that one learns, because it is here that one teaches. The best opportunity to start thinking about an academic career is at the faculty or during an internship, in the case of Medicine, and particularly in the area of PRM. These are the ideal times to begin the two fundamental activities of an academic career: research and education.

Learning is a process that goes far beyond the acquisition of information. Knowledge is different from wisdom. Sharing or discussing ideas and concepts are essential aspects of academic life. An academic must have a very specific sociocultural background. Study should be based not only on the necessary functions of attention and memorization, but also on the work of reflection that these allow, with the aim of creating knowledge.

c) The various stages of an academic career - In the early stages of an academic career in Medicine it is necessary to develop clinical, scientific and educational skills; to meet colleagues and experts; to begin to develop work that is required to be of high quality. In the middle of the career, it is necessary to expand activities beyond the institutions to which one belongs; to participate in international activities, such as reviewing articles, joining editorial boards of journals, and attending international conferences. Writing and publishing is essential if one wants to progress in one's career. Finally, seniors, professors and directors of services and departments, who have achieved a high level of distinction in the academic world, must remain active and maintain scientific production, both in the field of research and education. This is the time when academics truly become teachers, mentors and examples for new generations of researchers and professors.

d) The specific case of Academic Capacity in PRM in Portugal - The reflections set out above obviously apply to the specific case of PRM. It is worth, however, putting

forward a few more thoughts that condition the development of academic capacity in Portugal, within the scope of this extremely important area. Firstly, the scarce and asymmetrical approach to this topic in the different Medicine courses of Portuguese faculties. Without the presence of PRM in undergraduate medical education, we seriously compromise the development of training leading to effective academic teaching and research activity in this specialty. Then, there is the existence of insufficient preparation and knowledge in the methodological field. This paradigmatic change and its dissemination are urgently needed. We also believe that there is still a great deficit in the connection/collaboration between academia and hospitals/health establishments. University hospitals should develop much more advanced academic activity. We have seen many organizational, economic and even conceptual limitations in this area. In some cases, there have even been setbacks. Although there is no historical tradition in this area in Portuguese medical faculties, we believe that at certain times there have been better prospects in some of them. If we want to point out strategic paths for this development of academic capacity, we can put forward arguments of a social nature, such as the need to implement health policies where PRM is paramount. The priority of institutional public funding for this area of care with direct implications for the resulting scientific activity. The equally important and

decisive commitment of non-governmental organizations, involving the so-called “civil society”. Health subsystems, social solidarity institutions and private sector agents themselves, particularly insurance companies, also play a relevant role. They are interested parties and cannot remain aloof from this process. There is a social and moral responsibility here.

## Conclusion

Developing academic capacity in the field of PRM in Portugal is a long road ahead. However, some steps have already been taken. Although scarce, there is some research. Today we have more PhDs in this area, although their number continues to be very small. We can and should look at examples from other countries that are more advanced in this area. We are already aware of many of the constraints that hinder the development of PRM academic capacity in our country. In other words: the diagnostic assessment of the problems that affect PRM academic involvement in our country has been largely carried out. We therefore know relatively well what is limiting us. It is urgent to promote consistent measures to achieve other levels of academic representation, a primary objective of the progress that we all desire and that society deserves.

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