Physical and rehabilitation medicine training center in Split, Croatia: striving to achieve excellence in education of a rehabilitation team

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Abstract

Purpose: The aim of this manuscript is to describe recent changes in rehabilitation medicine education in Croatia, and to highlight the effort that was made at University of Split School of Medicine, as well as at University Hospital Split in order to improve training in rehabilitation medicine.

Method: Critical collection and study of pertinent data on evolvement and present state of physical and rehabilitation medicine (PRM) education in Croatia.

Results: Education in physical medicine and rehabilitation in Croatia was mainly focused on rheumatology rather than rehabilitation. In order to satisfy the new standards set for quality of rehabilitation medicine national curriculum reform was made for medical students, specialist and physiotherapists and new rehabilitation medicine training centers were established throughout the country.

Conclusions: Academic setting such as PRM training center Split enables education for different health professionals at the same place and time, which provides opportunities for learning about competencies of other team members and development of future collaboration. Also, a uniform approach to education in rehabilitation medicine is provided for all health professionals. All of this sets a solid foundation for education of integrated rehabilitation team and achieving excellence in contemporary Croatian PRM.

Implications for Rehabilitation

- In order to achieve high quality rehabilitation it is necessary to make education accessible to all rehabilitation team members.
- Implementation of rehabilitation principles in undergraduate education sets a good foundation for the development of postgraduate and specialty training in rehabilitation medicine.
- Academic setting such as physical and rehabilitation medicine training center Split provides a uniform approach to education in rehabilitation medicine for all health professionals.

Introduction

Rehabilitation medicine aims to enhance and restore functional ability and quality of life of those with physical impairments or disabilities. This is best accomplished by an interdisciplinary team approach, which is one of the hallmarks of rehabilitation medicine [1]. It is generally agreed that there is an increase of the needs for medical rehabilitation since the population is ageing, the incidence of noninfectious diseases, especially diseases of the musculoskeletal system and neurological disorders is rising, as well as the number of road traffic polytrauma [2].

The circumstances under which Croatia became an independent state in 1991, exposed to the brutal aggression over the 4-year war, led to an enormous number of disabled and handicapped individuals. A large need for rehabilitation of Croatian war casualties was described in a number of manuscripts in medical literature [3–6]. Those unfortunate circumstances were a significant reason for the increased development and understanding of real value of rehabilitation medicine and also for an objective analysis of limitations in contemporary rehabilitation medicine in Croatia [3,4]. Rehabilitation process of war casualties was indirect reason for changes in educational process of all medical professionals who take part in rehabilitation team, as well as for changes in the approach of all the existing experts toward rehabilitation problems in Croatia [3,4].

The aim of this manuscript is to describe recent changes in the field of rehabilitation medicine education in Croatia, and to highlight the efforts that were made at University of Split School of Medicine, as well as at University Hospital Split in order to improve training in rehabilitation medicine.
History of rehabilitation medicine in Croatia

Although Croatia is a small country in Central Eastern Europe, it has a 100-year-old tradition in rehabilitation medicine [7]. First, rehabilitation facilities in Croatia were thermal resorts, established for utilization of mineral springs, traditionally used in the historical region of Croatia since the Roman time for healing purposes [8,9]. Great natural richness in mineral springs all over Croatia led to development of a large number of specialized rehabilitation centers (Daruvar, Bizovac, Istra, Ivičić Grad, Krapina, Lipik, Stubica, Topusko, Varaždin, Sisak and Split) [10]. Geographical dispersion of these institutions largely contributed to the poor cohesion of health professionals and absence of a common vision of the development of rehabilitation medicine as a profession [9,10].

With the increased focus on scientific and medical approach for dealing with different problems in rehabilitation medicine, the dispersed system of rehabilitation medicine was abandoned and directed toward the major centers in former Yugoslavia [11].

Center for rehabilitation medicine in Croatia became Zagreb, now the capital of the Republic of Croatia, where Drago Čop founded Public bath and department of physical therapy Terapija in 1928, the first rehabilitation institution in Southeastern Europe [7].

Current status of rehabilitation medicine in Croatia

At the moment, there are 1900 rehabilitation beds in Croatia, which is a high ratio of 0.42 per 1000 inhabitants, considering that the minimum recommended standard is 0.10 [12–14]. Croatia has the second highest ratio of physical and rehabilitation medicine (PRM) specialists per 100,000 inhabitants among European Union of Medical Specialists (UEMS) member countries [13,14]. However, the ratio of physiotherapists of 1:3000 inhabitants is significantly lower than the same ratio in Austria (1:350), Switzerland (1:720) or Slovenia (1:1404). Also, the number of other rehabilitation professionals, such as occupational and speech therapists, psychologists, social workers, nurses and others, who are important part of rehabilitation team, is unequally low [8].

Although some of these numbers are impressive, rehabilitation medicine in Croatia did not yet reach necessary standards. Rehabilitation medicine in Croatia needs to address many issues, such as increasing rehabilitation needs, abundance of PRM specialists and rehabilitation beds, as well as shortcomings in education, which is focused on rheumatology rather than rehabilitation [8,12]. The existing traditional system of rehabilitation care can not satisfy the new standards set for quality and efficiency of rehabilitation medicine [13,15]. Need for a change in Croatian educational and rehabilitation system was evident [8].

Development of PRM training center in Split, Croatia

After the first PRM training center was set up at the Department of Physical Medicine of University of Zagreb School of Medicine in 1959, and the first higher education institutions were established for education of physiotherapists, uniform approach to work and education in rehabilitation medicine was adopted and common working algorithms were implemented.

Establishment of higher education institutions in the field of medicine in other three largest Croatian cities – Rijeka, Osijek and Split – led to evolution of these institutions into new regional training centers with the different field of competencies [16]. For the purposes of high-quality training in rehabilitation, it was necessary to make education accessible to all interested persons by conducting it in various educational centers that were organized apart from Zagreb in other Croatian cities.

Split is the second largest city in Croatia, located on the Adriatic coast. It was founded 1700 years ago by the Roman Emperor Diocletian at the place where the sulfurous water springs offered the possibility for treatment of diseases and implementation of rehabilitation procedures. The legend tells that the Diocletian palace was built precisely on the location that was exceptionally rich in sulfurous water springs, for treatment of the Emperor Diocletian [17]. Nowadays, Split is a university city, offering a respectable university education for different profiles of medical professionals, where new PRM training center has been developed.

The Academic Department of Physical medicine, Rehabilitation and Rheumatology at University Hospital Split evolved from the private bath of Roman emperor. Nowadays, employing 13 specialists in physical medicine and rehabilitation (2 of them also with postgraduate training in rheumatology), 75 physiotherapists, 25 nurses and 1 speech therapist, the Department is more than capable to influence the solution of problems, education of future health care professionals and development of rehabilitation services in the community [17].

Based on estimation of teaching quality parameters and the increased workload in the educational process of rehabilitation professionals of various profiles, the Department of Physical and Rehabilitation Medicine was founded in 2008 at the University of Split School of Medicine, being the second such department formed in all four Croatian medical schools.

In this way, implementation of significantly more complex process of education was enabled. Not only for students and medical doctors specializing in specific clinical branches, as well as for provision of postgraduate and continuing medical education courses or studies in the field of rehabilitation medicine.

The existence of the Department of Physical and Rehabilitation Medicine in Split, Croatia has enabled advancement opportunities for young professionals, including both professional and scientific development, which will be reflected in increased number of publications [18–23]. Education of scientific and teaching staff was undertaken to enable further prosperity of rehabilitation medicine at the University of Split.

Report on all relevant indicators related to the work of the rehabilitation team in Split and educational needs of young physicians were submitted to the Croatian Ministry of Health. On the grounds of the submitted report, accreditation for conducting long-term education of young physicians specializing in PRM was obtained in 2005. That recognition signified the establishment of a new PRM training center at the Department of Physical and Rehabilitation Medicine of the University of Split School of Medicine and at University Hospital Split. The structure of training center is shown in Figure 1.

![Figure 1. Structure of physical and rehabilitation medicine training center in Split.](image-url)
Structure of physical medicine and rehabilitation education in Split training center

Undergraduate medical students’ education

Understanding the need for implementation of rehabilitation principles in undergraduate education, a reform of PRM education was carried out at University of Split School of Medicine in the academic year 2001/2002 [16,24,25]. Curriculum reform was undertaken under the auspice of Professor Reuben Eldar [26].

Later on, a model of rehabilitation education implemented in Split was chosen as a template in the process of standardization of undergraduate education at all four medical schools in Croatia. Based on the reformed curriculum, understanding of rehabilitation problems and needs became more available to students. Excellently rated in student surveys, with average grade 4.6 out of 5, this new curriculum raised the interest for rehabilitation medicine among medical students as well as among young physicians in search for adequate specialization [16].

On several occasions the content of educational activities in the subject PRM was changed according to actual needs in the education of future physicians and respecting the interest of students for certain areas of rehabilitation medicine, as was previously reported [16]. The current program for the 5th-year students kept the same number of hours, but was refined with new content in the field of rehabilitation medicine as shown in Table 1.

The application of different forms of physical therapy became the core of a practical training of medical students. Furthermore, every year students have a mandatory 2-day fieldwork in the Kalos Rehabilitation Hospital in Vela Luka, Korčula [16,27]. By residing and working as part of the rehabilitation team in this affiliated institution of University of Split School of Medicine, students become familiarized with the rehabilitation possibilities, as well as with occupational and everyday needs of patients with disabilities. By organizing an undergraduate clinical subject in this way, we believe that rehabilitation medicine will gain on significance in the eyes of future medical practitioners.

By setting a good foundation during undergraduate medical course, development of postgraduate and specialty training in rehabilitation medicine was enabled which will ensure the development of continuous professional education [2].

Specialty training

Recently, new curriculum, extended with designated theoretical knowledge, practical competences and skills has been imposed as a part of the process of updating all specialty training in Croatia, following the European Union Directive 2005/36/EC [28]. Changes in curriculum were necessary for at least two main reasons. Firstly, rehabilitation medicine in Croatia was developed under the auspices of the first professors, including Dürrigl Theodor, Jajić Ivo and Domljan Zlatko, who mostly dealt with issues of rheumatic diseases, and neglecting other causes of disability, so the training program for specialists was directed to rheumatological conditions, disregarding other areas of rehabilitation medicine [29–31]. Secondly, changes were mandatory part of negotiation process for accession of Croatia to European Union.

From 2010, specialty training in Croatia lasts for 52 months, with 10 months of basic training and 38 months of PRM training, including 3 months of postgraduate specialty studies in PRM [32]. Detailed program of specialization in PRM field was described previously by Moslovac at al. and was based on implementation of the “Curriculum of Studies and Theoretical Knowledge for the European Board Diploma” [13].

Specialty training for young specialist in PRM was concentrated, until recently, in the only national physical medicine and rehabilitation training center in Zagreb. However, because of the growth of quality of the Department of Physical Medicine, Rehabilitation and Rheumatology of the University Hospital Split, promotion of specialists of PRM into teachers of University of Split School of Medicine, and their participation in the teaching of medical students and physiotherapists, the necessary conditions were met for training of future specialists in the field of PRM in numerous clinics and departments of University Hospital Split, according to the current curriculum [32]. At present, PRM residents are allowed to spend 37 months of specialization at the University Hospital Split. The other 15 months of specialization are carried out in other Croatian centers to provide students with additional experience.

Organization of education of young physicians from southern part of Croatia in regional university center significantly facilitated and improved the process of PRM education. In this way, education process was upgraded due to the small number of residents per individual mentor. Also, profile of patients at the Department as shown in Figure 2, enables acquisition of all the competencies which PRM specialists needs. Furthermore, the fact that one of the four Board Certified PRM Trainers in Croatia is in Split additionally enhances the quality of education.

University training of physiotherapists

For successful implementation of rehabilitation medicine principles, adequate training has to be provided to all rehabilitation team members. In 2001, a 3-year higher education for physiotherapists was offered at University of Split School of Medicine, as an undergraduate professional study program. A total of 139 professional bachelors of physiotherapy graduated at the University of Split School of Medicine until 31 August 2010, and found employment in Croatian healthcare institutions as well as in many institutions in Austria, Germany, UK and Canada.
Although much was achieved in the education of Croatian physiotherapists till 2010, the necessity for a new educational reform was imposed due to the increased demands of medical care, implementation of new technologies, diagnostic and therapeutic procedures, as well as a need to acquire elementary knowledge and skills in the field of management, leadership and education of future generations. In order to ensure those high quality educational needs, the shift from professional to university level of education needed to take place, as was unanimously agreed in European Union (EU Directive 36/2005/EU) [28,33].

Having experience in higher professional education of physiotherapists, curriculum reform was initiated in coordination with other institutions in Croatia providing health sciences education, with the aim of harmonizing the curriculum with European standards [34].

The new curriculum was developed according to the recommendations of the World Confederation for Physical Therapy (WCPT) and guided by the principles of the Bologna and Munich Declaration [34,35]. The new Croatian model for education of health professionals at university level was accepted at the 73rd meeting of the National Council for Higher Education of the Republic of Croatia on 2 June 2010, and follows the recommendations specified in European and Croatian Qualification Framework: learning outcomes are competency-based, mobility of students and faculty is encouraged and the means of quality assurance are anticipated [33,34,36].

University education of physiotherapist is planned to proceed on three levels: university undergraduate study (bachelor’s degree), university graduate study (master’s degree) and university postgraduate study (doctoral degree) as shown in Figure 1 [34]. To improve quality of higher education of health sciences, in academic year 2011/2012 a new Department of Health Sciences Studies was established within University of Split, where Physiotherapy is one of the provided bachelor’s degree courses. Since the Department is still developing, due to the lack of staff, at the moment only a bachelor’s level of education is provided [34]. It is anticipated that the second level of physiotherapist education will be provided to students in year 2013.

With the theoretical basis covering the necessary medical knowledge, overall concept of university education of physiotherapists is aimed at acquiring specific skills in the field of physical medicine and rehabilitation. Therefore, priority is given to practical training and the number of professional subject hours has been increased relative to the basic subject hours, in order to meet the needs of students and the requirements of the EU as shown in Figure 3 [34].

**Conclusion**

One of the ways to raise the quality of health care and in that way influence the improvement of life quality for those with different musculoskeletal conditions is through implementation of vertical university education of all health professionals [2]. It has been proven that effective team work in rehabilitation medicine is associated with better patient outcomes [37].

Academic setting such as PRM training center Split enables education for different health professionals at the same place and time, which provides opportunities for learning about competencies of other team members and development of future collaboration [1,25]. Also, a uniform approach to education in rehabilitation medicine is provided for all health professionals. All of this sets a solid foundation for the development of an integrated rehabilitation team which is a link that is still lacking in contemporary Croatian rehabilitation medicine.

**The future**

Since we are aware of the deficiencies and the needs for further improvement in the quality of education in rehabilitation medicine and teamwork, we will strive to implement the principles of rehabilitation in all parts of undergraduate medical curriculum according to the guidelines of “Hannover model for the implementation of rehabilitation in the undergraduate medical training” [25]. The process of vertical implementation of rehabilitation medicine principles will start during this academic year for the 6th-year undergraduate medical students through program of newly established Department of Clinical Skills. Also, we are planning to implement different teaching models in order to equip future general practitioners with adequate skills needed for dealing with people with disabilities [38,39].

Second and third degree of university education for physiotherapists is underway. Also, development of framework for university education for other health professionals such as
occupational therapists is needed, as well as planning of additional professional education of nurses in rehabilitation field [40].

Young professionals from all parts of Croatia recognized the educational quality and capabilities provided by the Department of Physical Medicine and Rehabilitation in Split, Croatia, and by using the possibility of horizontal mobility they come for training into our institution. In near future we expect to meet the certification conditions for UEMS Training Center, which will enable us to educate colleagues from other parts of Europe. In this way, expanding physical medicine and rehabilitation training center in Split, Croatia will continue to strive for excellence beyond Croatian borders.

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Declaration of interest

The authors report no declarations of interest.

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