Editorial

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Physical and Rehabilitation Medicine - a changing medical specialty

Physical and Rehabilitation Medicine (PRM) is not any more a young specialty. In the United States it was already started in the 1920ies, a first society was founded in 1938, and the specialty was officially recognized by the American Medical Association in 1945. In Europe the development of PRM was very diverse from country to country having its roots in Balneology and Physiotherapy. At a European level the Academy was founded in 1969 and the Board for Physical and Rehabilitation Medicine in 1981. In some countries, Physical and Rehabilitation Medicine has been recognized not before the 1990ies (e.g. Germany: 1992). Nevertheless, a long history and tradition does not mean that there is no development any more, on contrary the process of change in PRM seems to become even more dynamic now.

The development of the specialty of PRM can be characterized by three main tendencies:

1. One of the main roots of Physical and Rehabilitation Medicine is the **systematic use of physical modalities** (in the United States the specialty originally was named "Physiatry"). Within this context "physical" does not (primarily) reflect the fact that these modalities are related to physical energies ("*physics*") but they induce physiological reactions in the body (*physis (greek): nature, growth*). In biology and medicine this term is used for normal processes in the body and related to the scientific field of physiology. Within this context "Physical Medicine" is defined as *"the medical discipline that covers, on a scientific basis, interventions aimed at improving physiological and mental functioning, using physiological mechanisms (such as reflexes, functional adaptation and neuroplasticity), as well as physical and mental training (Gutenbrunner et al 2006, 2007). Tesio & Franchignoni* (2007) give an additional aspect of the word "physical": it reflects the interaction of external and internal processes in medicine and therefore represents the so-called bio-psycho-social model of interaction between external world (physical environment) and internal medical processes.

   Nevertheless the use of physical modalities is still essential part of the practice of Physical and Rehabilitation Medicine. This applies not only for rehabilitation but also for the treatment of many diseases and for prevention. Within this context the fact that most physicals modalities can – if applied repeatedly – induce adaptive modifications of physical functions (*for an overview see Didier 2004; Gutenbrunner 2007*). These modifications may normalize altered functions or even compensate lost functions. This is well investigated for many aspects of physical training, and the modern concept of neuroplasticity reflects similar principles.

2. Already in the eighties of the last century **rehabilitation moved into the centre of the specialty** (*European Academy of Rehabilitation Medicine 1989*). Here it is clearly stated that PRM is *"designated to prevent an imminent impairment, to preserve, develop or re-establish the ability of a person to perform normal activities"*. Such a task requires medical treatment in conjunction with social interventions as part of a coordinated process. It is made clear that PRM as a specialty includes both medical competencies in diagnostic and treatment as well as of coordination the rehabilitation process using multi-professional team working. This tendency gained even more weight in the second White Book for Physical and Rehabilitation in Europe (*Gutenbrunner et al. 2006, 2007*). Within this document it is clearly stated that people with disabilities and those with chronic disabling conditions have a basic right for rehabilitation including specialised medical rehabilitation care. It is shown that Physical and Rehabilitation Medicine can contribute significantly to an improvement of functioning of these persons. It introduces the ICF-model as a basis of the strategies and programs of PRM. Reflecting this, the scope of activities enlarges significantly as rehabilitation and functional improvement is needed in all phases or sectors

of medical care, starting from acute care to community based interventions (*Gutenbrunner et al. 2006, 2007; Gutenbrunner & Delarque 2009*)

2. On the basis of **the comprehensive model of functioning as described in the ICF** a new definition of the specialty of Physical and Rehabilitation Medicine has been formulated by *Stucki & Melvin* (2007) in cooperation with the Professional Practice Committee of the UEMS-PRM Section. It consequently states that *"PRM is the medical specialty that aims to enable people experiencing or likely to experience disability to achieve and maintain optimal functioning in interaction with the environment".* Besides the medical diagnosis and treatments, this definition gives special emphasis on the comprehensive process of rehabilitation including multiprofessional cooperation. It additionally makes clear that *"PRM specialists manage rehabilitation, health and multi-sectorial services"* and *"inform the public and decision-makers about suitable policies and programs in the health sector […]"* (*Stucki & Melvin 2007*). This ICF-based approach enlarges the field of competence of the PRM-specialist from a classical medical approach to a comprehensive management of disability including societal aspects.

How to put these developments and the immense demands into practice and implement them as acting specialist for Physical and Rehabilitation Medicine? Again three factors are of major importance:

A. **to develop further clinical competencies and adapt them to the demand of modern medicine**. Only a few examples can be given here. New methods in neurosurgery (e.g. deep brain stimulation techniques) require the development of specialised post-acute PRM-programs. Acute rehabilitation in specialised units (acute rehabilitation units ARU) requires specific knowledge in stabilising autonomous functions, managing spasticity and dysphagia and others (*Ward et al. 2010*). The development of new rehabilitation technologies (e.g. in the field of prosthetics and orthotics or communication technology) demand continuous increase of knowledge and skills of the PRM specialist. Thus medical competencies in diagnostic and treatment will be more and more comprehensive and will enhance the need of specialised education.

B. **to find tools to fulfil the enormous demands of the comprehensive approach**. The comprehensive approach to manage disability according to the ICF demands an expansion of educational needs and knowledge of the PRM specialist. On the one hand, influencing participation and considering environmental and personal factors need additional knowledge on psychosocial and societal aspects of participation. It needs new assessment tools and intervention strategies. Taking into account of the specific individual demands as well as of the personal decision of people with disabilities (*Gutenbrunner et al 2006, 2007*) will need additional training for a "classical" medical doctor. The comprehensive task of rehabilitation of people with disabilities will require substantial cooperation both with other medical specialists and with other health and social professionals (*Neuman et al. 2010*). Among other aspects to be leader of such rehabilitation team will need special training too.

C. **to develop a scientific concept of the field**. As such a concept also needs to be comprehensive. This may be the most challenging task for the future of PRM. *Stucki & Grimby* (2007) proposed a comprehensive structure for research covering the need for studies in all dimensions of Physical and Rehabilitation Medicine ("*from the cell to society*"). According to this model, research on the mechanisms of repair and adaptation as well as the action of physical treatments including exercise ("biosciences in rehabilitation") must be part of PRM sciences. Studies on clinical effects of treatments as well as rehabilitation technology are urgently needed too ("Biomedical rehabilitation sciences and engineering"). In order to provide best care and enhance scientific evidence studies on concepts and interventions are indispensable ("professional rehabilitation sciences"). Looking at the societal integration of PRM research has to cover aspects of the health care system and needs scientific information about epidemiologic aspects of functioning. These aspects are among others covered in "integrative rehabilitation sciences" and "human functioning sciences" (*Stucki & Grimby 2007*). Consequently, research will need to include basic research, applied sciences as well as professional sciences (*Gutenbrunner et al. 2009*). These tasks will need specialisation of research units, cooperation with other scientific fields, such as molecular biology, psychology, epidemiology and others as well as establishing research networks and consorts.

Of course these trends will influence the specialist training in PRM too (*Viton et al. 2009*). Additionally in future the development of subspecialties of the field similar to the United States will be discussed in the near future. Such fields could be PRM in children or in the elderly, acute rehabilitation, musculo-skeletal PRM or many others. Such specialization is living practice at the level of PRM-programs already now (*de Korvin et al. 2009*).

All in all these reflections show that Physical and Rehabilitation Medicine in fact is a rapidly developing medical specialty. All of those who take responsibility for the development of the specialty of PRM should be aware of the fact that the application of the comprehensive model of the ICF will lead to an enlargement of tasks and require the development of new strategies, both in professional practice and research. Of course, quality of care and education will have to face similar challenges (*Delarque et al. 2010*). Although a lot of work has been done there is still an enormous amount of work ahead of us.

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