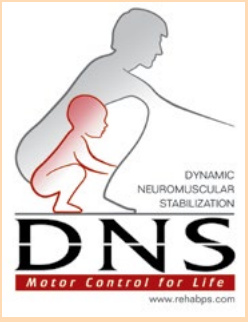
Pavel Kolář et al.

# CLINICAL REHABILITATION



# FOREWORD

The main motivation for me to begin work on this textbook was an effort to refine knowledge of the qualified public about rehabilitation and provide a framework regarding the true objectives of this field. Our profession is sometimes misconceived as massage therapy, exercising after orthopedic procedures, rehabilitation and sometimes it is reduced to only the use of therapeutic agents (modalities). I have also encountered the opinion that it is linked to or even directly considered some kind of an alternative treatment. Another important motivation for me was the lack of current study materials for physicians undergoing residencies, for graduate and post-graduate physical therapy students, as well as for physicians of other clinical specialties who want to be introduced to the methods of treatment rehabilitation used in their specialization.

In my view, I consider it essential that the foundation for rehabilitation treatment approaches be neither a trend nor a school of thought (chiropractics, osteopathy, musculoskeletal medicine), but rather a wide, general foundation in the fields of clinical physiology and neurophysiology. It also needs to be appreciated that rehabilitation is not only limited to diagnostic and treatment methods, but it also attempts to limit the extent of psychological, behavioral and social changes related to the consequences of an injury or illness. Therefore, rehabilitation should not be perceived as strictly a medical field but a field that overreaches these boundaries and extends into the social, academic and work arenas. Comprehensive (integrated) rehabilitation applies to individuals whose health was compromised to a varied extent as a result of an illness, injury or a congenital defect and who require special assistance to achieve the highest possible level of independence. A person with a disability perceives limitations that they are unable to overcome while performing certain activities but they feel able and healthy in a number of other activities. Removing and solving these limiting problems is one of the particularly important tasks of rehabilitation. Therefore, the concept of rehabilitation must complement not only the treatment process but also the subsequent rehabilitation process.

From this point of view, rehabilitation is a very broad field which cannot be covered in detail in one book. Similarly, it is not possible to cover this extensive subject by one specialist. Success is based on a coordinated effort of various specialists.

In this book, I focused on the treatment component of rehabilitation and devoted more space to it than the educational, social and occupational areas. Given the fact that the diagnostic and treatment approaches of rehabilitation are focused primarily on the movement system, this field reaches into practically all clinical fields (neurology, orthopedics, internal medicine, oncology, immunology, psychiatry, etc.). Movement function plays an important role in all of these clinical fields. This is because physical activity and its repeated action manifest themselves by a change in function in a number of systems (cardiorespiratory, immune, central nervous system and metabolic changes), which allows for influencing these systems through modulation of its intensity, frequency and form. Another reason why rehabilitation reaches into several medical fields is the fact that the sensory afferent inputs from the entire body are always processed not only within its own sensory modality (visual, acoustic, proprioceptive, integumentary, etc.), but also within an integrated motor function. Our eyes, respiratory muscles, tongue, etc. serve not only the function they are dominantly selected for, but they also participate in postural and locomotive functions. This is well observed in athletic performances in which maximal force or a precisely accurate movement needs to be accomplished. For example, to strike a ball with required force, a tennis player makes a movement with their extremity, which is linked to a face expression, movement of the tongue in the direction of the stroke, eye movement in the direction of the stroke, modification of breathing by diaphragm activity (a grunt, Valsalva) to facilitate trunk stabilization, position of the contralateral extremity into the opposite (reciprocal) position etc. It is an overall involuntary movement pattern that interlinks individual sensory modalities and, thus, it is related to the majority of medical fields. This principle of modality integration within postural locomotor functions is a component of CNS development and it was established based on this principle. The fact that the described integration occurs at higher levels of control than the spinal cord and the brain stem is significant. This can also provide hypotheses regarding the effects of a number of alternative approaches whose justification of spinal cord and brain reflexology is not sufficient and is therefore substituted in clinical practice by alternative explanations. These central programs are organized above the brain stem level and can explain why functional pathologies become

chained in predetermined sequences; why needle application in a single point has functional consequences in a completely distant area of the body including the visceral region; why an internal dysfunction does not only show reflexive response in the corresponding segment but in quite distant areas and in various afferent modalities (skin hyperalgic zones, changes in dermographism, muscle trigger points, joint restrictions, etc.); why respiratory function can be influenced through eye movement (eye movement automatically causes change in the breathing pattern); why breathing pattern changes with a change in hand position, and a number of other phenomena. The control system of the postural locomotor functions then provides us with a program that offers a completely new approach in the understanding of rehabilitation approaches.

Clinical diagnosis focused on symptomatology organized within postural locomotor functions should not be considered an exclusive component of treatment rehabilitation but also a component of the remaining clinical specialties.

I based the structuring of the General and Special Sections of the textbook on the function of the movement system in relation to individual clinical specialties. Therefore, I did not base them on diagnoses but rather on the functional manifestations of the disease. The General section of the textbook includes functional symptomatology and syndromology in dysfunctions of the nervous, musculoskeletal and internal systems and their clinical and laboratory examinations. The majority of treatment approaches are also presented in this context meaning that the treatment based on symptomatology and syndromology dominates. In the Special Section of the textbook, treatment rehabilitation is presented in individual clinical specialties – neurology, orthopedics, internal medicine, oncology, gynecology and psychiatry.

I purposely devoted less attention to occupational therapy, balneology and therapeutic agents (modalities) than these treatment approaches deserve. The reason is not to underestimate their value, but rather them already being reasonably available and sufficiently described elsewhere.

In clinical approaches of the General Section of the textbook, I have extensively drawn from and expanded on a trend known worldwide as the "Prague School." In rehabilitation, the roots of this school of rehabilitation can be found in the Neurology Clinic of Professor Henner whose concept of neurology was very broad and therefore included even vascular diseases and movement system diseases within neurological symptomatology. Treatment rehabilitation was promoted by K. Obrda who, together with J. Karpisek, wrote the first rehabilitation textbook for neurological diseases and organized an international congress in 1965. On the theoretical level, F. Vele and O. Stary played an important role. Stary and K. Lewit demonstrated the significance of painful functional deficits of the movement system. In this aspect, the large contribution of Professor J. Jirout who was the founder of functional radiology of the spine, needs to be remembered. Thanks to the work of Professor V. Janda, the basic significance of movement patterns was gradually underwood and the term "functional pathology of the movement system" was established. This presentation was even further strengthened by the influence of scientific studies and personal contact with D.G. Simons and J.G. Travell to whom we are grateful for providing detailed knowledge of muscle trigger points that also cause a limitation in joint mobility, so called joint restrictions. To understand the function of the movement system, individual dysfunctions, such as trigger points and joint restrictions, need to be understood in the context of the entire movement system, i.e. the laws of chaining of functional dysfunctions. The key to this understanding was a better knowledge of the control function of motor skills. The new approach of treatment rehabilitation during movement re-education is based on utilization of knowledge about human motor development. This new trend enriches the current empirical and physical approaches by findings originating from the control processes of the CNS that mature during motor development. Dr. Vaclav Vojta, whose work we are currently trying to continue, has a significant role in this approach. Professor Vojta also came from Henner's department and his conceptualization is an inherent component of contemporary clinical rehabilitation practice. Unfortunately, the neurophysiological principle of the entire approach to developmental kinesiology is still not fully appreciated due to disagreements about indication and the type of application of the Vojta method. However, not many critics understand the true basis of the Vojta approach. What is essential and substantial is not only the way that rehabilitation of movement dysfunction is utilized, but also the fact that the concept of developmental kinesiology is combined with the neurophysiological view relying on the findings of neurosciences associated with the currently predominant physical mechanical views.

In this book, I was also trying to respect and emphasize more certain general principles that condition the treatment effect, however, to convey the information in a written form is significantly limited for some of them. The respect for a comprehensive patient perspective is one such principle. The fact that human life occurs under specific biological, psychological, social-psychological, materialistically economic and ecological conditions needs to be implanted within the diagnostic, treatment and preventative approaches. Diseases and injuries cannot be viewed in isolation but rather need to be integrated within the context

of such relationships because the treatment processes and rehabilitation are significantly affected by them.

I also aspired to prevent this textbook from becoming a proponent of only one method but rather support a variety of rehabilitation approaches based on a person's individual needs. The problem is that this does not allow for providing a clear-cut treatment approach for movement dysfunctions because these approaches need to also be modified to the patient's, and sometimes even the therapist's, personality. In this context, protocols based on one uniform foundation outlining what and how much needs to be done cannot be implemented. These approaches are a method of choice, offering the option of finding individual solutions to how to effectively proceed and how to best modify the approach for a specific individual.

It is almost impossible to express in written form some principles that significantly affect the results of a rehabilitation treatment. This, for example, includes the mutual trust between the patient and the rehabilitation specialist, which cannot be substituted by a client-expert relationship or by a work performance contract. The importance of effective communication, charismatic approach, suggestive appeal and one's own experience developed by sensory perceptions are additional examples.

Despite these limited options, I believe that this book will assist in better orientation in the broad field that rehabilitation truly is and thus will help fulfill the purpose for which it was written.

***Pavel Kolar***

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