

# BASIC CLINICAL REHABILITATION MEDICINE

MEHRSHEED SINAKI, M.D.

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*Edited by*

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## PREFACE

The first class of Mayo Medical School, composed of 40 students, began its studies in September 1972. These young men and women of high enthusiasm and intellect are carefully selected from many applicants. It was not until the academic year of 1974-1975 that those students began their rotation through the Department of Physical Medicine and Rehabilitation. Since then, our Department has not been the same. Their remarkable desire to learn and their inquisitiveness have enhanced our staff members' enthusiasm for educating and have enriched our academic lives. Some of these students have joined us as residents and colleagues and have furthered our cause for practice, education, and research. The original lecture series for the medical students was developed by Gordon M. Martin, M.D., chairman of the Department at that time. During the subsequent few years, the course was further strengthened through the efforts of Gudni Thorsteinsson, M.D., then chairman of the undergraduate committee for the Department of Physical Medicine and Rehabilitation, before he passed his responsibilities to me in 1980. Several members of our Department taught various topics. Gradually, the lectures and handouts were revised and a syllabus was developed. G. Keith Stillwell, M.D., and Malcolm C. McPhee, M.D., succeeding department chairmen, provided much encouragement.

The idea of preparing this book was crystallized after repeatedly being told by many of our students that we should write a book that they could use for the course. The material presented in the lecture series formed the basis of this book. It is aimed at medical students. Because excellent extensive books are available that contain detailed information on various subjects of rehabilitation, lengthy discussions have been avoided to enable the reader to grasp the concepts for rehabilitation of commonly encountered problems without elaborate reading. In addition to medical students, this book will be useful to junior residents in the field of physical medicine and rehabilitation and to physicians and residents in other fields.

I thank my colleagues in the Department of Physical Medicine and Rehabilitation for their support, for their enthusiastic teaching of the medical students, and for making the preparation of this book possible. My special gratitude goes to Roy S. Rogers III, M.D., Associate Dean for Academic Affairs of the Mayo Medical School,

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Mehrsheed Sinaki, M.D.

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# 1 CURRENT CONCEPTS AND PRACTICAL ASPECTS OF PHYSICAL MEDICINE AND REHABILITATION

*Mehrsheed Sinaki, M.D.*

*G. Keith Stillwell, M.D., Ph.D.*

**T**he primary goal of rehabilitation medicine is the achievement of maximal independence for handicapped persons by using the organized efforts of knowledgeable personnel in the health sciences and social service areas.

## DEFINITIONS

The scope and aims of rehabilitation have been conveyed by investigators in the field. Krusen<sup>1</sup> defined the field as follows.

Physical medicine and rehabilitation involves the medical examination and evaluation of the disabilities of handicapped patients, the prescription and medical supervision of physical and occupational therapy and other forms of therapy, the training of the handicapped person in ambulation and self-care and medical supervision and coordination of other rehabilitation procedures.

Krusen<sup>1</sup> described rehabilitation as follows.

Rehabilitation involves treatment and training of the patient to the end that he may attain his maximal potential for normal living physically, psychologically, socially and vocationally.

Rehabilitation is a creative procedure which includes the cooperative efforts of various medical specialists and their associates in other health fields to improve the physical, mental, social and vocational aptitudes of persons who are handicapped, with the ob-

jective of preserving their ability to live happily and productively on the same level and with the same opportunities as their neighbors.

The goal of rehabilitation is to decrease the dependence of the handicapped or disabled person by developing, to the greatest extent possible, the abilities needed for adequate functioning in the individual's situation.

In rehabilitation medicine, a patient's abilities rather than disabilities are stressed. "Rehabilitation medicine is the use of all methods of diagnosis and treatment which will restore the disabled individual to as nearly normal as possible."<sup>2</sup>

Rehabilitation should involve the progressive transition from the rehabilitation facility to home, to work, and into the community; this transition should be smooth and planned and engineered with care, foresight, and knowledgeable effort.

During recent years, medical schools have increasingly recognized the importance of physical medicine and rehabilitation, and free-standing rehabilitation centers and hospital-based rehabilitation facilities and programs have proliferated. Also, increases in the aging population and serious disabling injuries have enhanced the need for physical medicine and rehabilitation.

The team approach used in the field of physical medicine and rehabilitation involves all medical specialties. Resources of available, cooperating, trained personnel are more important than the facility. Each team is based on the individual patient's requirements. Desirable rehabilitation-oriented personnel include internists, physiatrists, neurologists, orthopedists, pediatricians, psychiatrists, speech pathologists and therapists, rehabilitation nursing personnel, physical therapists, occupational therapists, social service workers, psychologists, the patient's family, clergy, insurance carriers, vocational counselors, vocational placement services, and specialized personnel for deficits such as blindness, deafness, and mental retardation.

In the United States, associations of physicians interested in physical therapeutics date as far back as 1890 and have as their surviving descendant the American Congress of Rehabilitation Medicine. Its membership is not limited to physicians. The other principal professional organization, whose membership is limited to physiatrists, is the American Academy of Physical Medicine and Rehabilitation, founded in 1938. A smaller group, the Association of Academic Physiatrists, provides, among other functions, liaison with the Association of American Medical Colleges.

Historically, Frank H. Krusen, M.D., is regarded as the father of physical medicine, and Howard A. Rusk, M.D., was the foremost leader in the expansion of medical rehabilitation during and after World War II. The American Board of Physical Medicine was established in 1947; "rehabilitation" was added to the name in 1949.

Several disease-oriented organizations have rehabilitation as a major concern, such as the American Academy for Cerebral Palsy and Developmental Medicine, the American Spinal Injury Association, and the Muscular Dystrophy Association. The National Rehabilitation Association is principally concerned with state and federal vocational rehabilitation programs.

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## 2 HISTORY TAKING AND EVALUATION OF PATIENTS

*Rolland P. Erickson, M.D.*

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As with other facets of medicine, the cornerstone of rehabilitation medicine is a thorough and useful evaluation<sup>1</sup> of the patient. For patients who are hospitalized in a rehabilitation unit for comprehensive care, a complete general medical workup is necessary to manage the common medical problems encountered by the physiatrist serving as primary physician. The disability cannot be isolated from preexisting and concurrent general medical problems.

In addition, certain aspects of the rehabilitation evaluation go beyond the traditional medical workup.<sup>2</sup> Activities of daily living are those endeavors that are accomplished on a daily basis in order to maintain personal independence. The abilities to eat, bathe, groom, toilet, turn in bed, rise, sit, lie, transfer (from bed to chair, chair to toilet, or chair to car), accomplish mobility (walk with or without gait aids or operate a wheelchair), speak, hear, see, and think have an impact on the ability to live independently. Disability occurs when these and other skills of independent living are impaired. These functional skills must be assessed to identify the most appropriate rehabilitation intervention. For example, consider a patient with recent hemiparesis and aphasia. The neurologist evaluates the patient to determine cause (cerebral thrombosis, hemorrhage, embolism, or tumor), proper acute management, and prevention of progression of the impairment (hemiparesis and aphasia). The physiatrist evaluates the patient not only to identify strategies for impairment reduction (muscle reeducation and strengthening) but also to decipher maneuvers that minimize the disability (inability to dress, bathe, or ambulate) that has resulted from the impairment.

One soon realizes that the rehabilitation evaluation is not limited to a specific organ system. Instead, a truly comprehensive quality to the assessment emerges. In that the goal of rehabilita-