INTRODUCTION TO PHYSICAL THERAPY

fifth edition

MICHAEL A. PAGLIARULO

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This edition of the text is dedicated to my wife, Tricia, who is also a physical therapist. Our relationship began when we were both conducting clinical rotations at Rancho Los Amigos Hospital in Downey, CA as students from different programs. Our personal journeys soon aligned, while our professional journeys diverged a bit—I moved into academe and she continued with clinical practice. Over the decades of my academic career, her clinical perspectives were instrumental in ensuring I would apply the knowledge, skills, and attitudes I addressed in my courses into clinical applications. Her guest appearances in my classes and labs always added a clinical aspect to the content. I am grateful for her professional guidance and perspectives; caring for her patients/clients, family, friends, and complete strangers; and certainly her partnership through our 40 years of marriage.

Michael A. Pagliarulo
July 2015

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Preface

Our profession continues to evolve to meet the needs of society. Two examples of this are the revisions to the new Vision Statement of the American Physical Therapy Association and the Guide to Physical Therapist Practice 3.0. These documents and their predecessors have significantly influenced the three primary areas of the profession of physical therapy: practice, education, and research. Moreover, the ongoing changes in the legal and regulatory arenas, such as the Affordable Care Act, have also impacted the profession and practice of physical therapy. The current edition reflects these and other changes.

All contributors reviewed and revised their respective chapter in order to keep the content contemporary. This included updates to the information, references, photos, tables, and graphic material. We are pleased to publish the photos in full color, which more accurately displays the body area and therapist/patient interaction. Although content has been updated, the original purpose to serve as an introductory text remains the same. Part I addresses the Profession of physical therapy, and Part II provides an overview of primary practice areas with a consistent approach: General Description; Common Conditions; Principles of Examination; Principles of Evaluation, Diagnosis, and Prognosis; Principles of Intervention; and a Case Study to serve as an example of the application of the principles to that practice area. The comprehensive and current References and Additional Resources provide the opportunity to seek the advanced knowledge in the subject area.

It is now nearly 20 years since the first edition of this text was published. The success we have experienced across these 2 decades attests to the quality of the content and expertise of the contributors. I am pleased to maintain this level of quality in the 5th edition to describe the current status of the profession and practice of physical therapy.

Michael A. Pagliarulo

Acknowledgments

This text would not be possible without the efforts of the contributors to each chapter and personnel at Elsevier. Although personnel changes occur with each edition, including this one, the quality of the product remains outstanding, and for this, I am sincerely grateful.

In some cases, a contributor has moved from co-author to primary or sole author. Katy Eichinger now serves as the primary author for the Neuromuscular chapter and Cynthia Zablotny joins her as a co-author. Both have rich academic and clinical backgrounds in the area and provided an extensive update to the chapter. Karen Nolan (Pediatrics) and Teresa Hoppenrath (Older Adult) are now sole authors for their respective chapters. Having recently moved back to full-time clinical positions from academe, they ensure their chapters describe contemporary practice.

Changes have also occurred with the personnel at Elsevier. Christie Hart and Kathy Falk were instrumental in initiating the development of the current edition. Brian Loehr joined this project in 2014 and provided timely and excellent service in managing the content, revisions, and questions from contributors. This was welcomed given the extent of updates and number of contributors. Umarani Natarajan was helpful in the final stages of editing.

I continue to extend my gratitude to the students and faculty who use this text and provide helpful feedback. My commitment to this profession has not diminished over my 45 years of service, and I am thankful to have this opportunity to provide this learning material to students entering the discipline.

Michael A. Pagliarulo
July 2015

Contents

Part I

Profession

Physical therapy is knowledge. Physical therapy is clinical science. Physical therapy is the reasoned application of science to warm and needing human beings. Or it is nothing.[1]
Helen J. Hislop

1 The Profession of Physical Therapy: Definition and Development

Michael A. Pagliarulo

CHAPTER OUTLINE

KEY TERMS

American Physiotherapy Association (APA)
American Women's Physical Therapeutic Association
Autonomous practice
Client
Core values
Evidence-based practice
Guide to Physical Therapist Practice 3.0
National Foundation for Infantile Paralysis ("the Foundation")
Patient
Physiatrist
Physical therapist
Physical therapy
Physiotherapist
Physiotherapy
Profession
Reconstruction aide
Vision 2020
Vision Statement for Physical Therapy 2020

LEARNING OBJECTIVES

After reading this chapter, the reader will be able to:
1. Define physical therapy.
2. Describe the characteristics of a profession.
3. Describe a brief history of the profession of physical therapy in the United States and the major factors that influenced its growth and development.
4. Identify issues that continue to impact the profession.

The profession of physical therapy continues to evolve to meet the needs of society. Although it has received substantial publicity, confusion remains regarding its unique characteristics. For example, how does physical therapy differ from occupational or chiropractic therapy? This chapter's first purpose, then, must be to present and define this profession.

To define physical therapy thoroughly, it is also important to present a brief history of its development. A review of the past will demonstrate how the profession has responded to societal needs and gained recognition as an essential component of the rehabilitation team. It will also link some current trends and practices with past events.

DEFINITION

Part of the confusion regarding the definition of **physical therapy** results from the variety of legal definitions seen from state to state. Each state has the right to define the profession of physical therapy and regulate its practice. Such definitions are commonly included in legislation known as *practice acts*, which pertain to specific professions (practice acts are further described in Chapter 5).

To limit the variety of definitions, the Board of Directors of the American Physical Therapy Association (APTA) created the Physical Therapist Scope of Practice (Box 1-1),[2] which was originally titled *Model Definition of Physical Therapy for State Practice Acts*. This definition identifies several activities inherent in the practice of physical therapy. It uses language and terminology based on the ***Guide to Physical Therapist Practice 3.0*** (the *Guide*),[3] a pivotal document describing the approach of the physical therapist (PT) to patient care. One of the fundamental concepts of the *Guide* is the five elements of the patient/client management model, and these are incorporated into the definition. (These are briefly described here. For more details on the elements of the model see Chapter 2.) First and foremost, physical therapy begins with an examination to determine the nature and status of the condition. An evaluation is then conducted to interpret the findings and establish a diagnosis and prognosis that includes a plan of care. Interventions are then administered and modified in accordance with the patient's responses. Interventions focus on musculoskeletal, neuromuscular, cardiovascular and pulmonary, and integumentary disorders. The definition of physical therapy also reflects the areas of prevention, and the promotion of health, wellness, and fitness, all of which occur across the life span. Other important activities in the role of the PT include consultation, education, and research. These may be separate from, but ultimately contribute to, effective practice.

Traditionally, PTs have provided care to **patients**—individuals who have disorders that require interventions to improve their function. **Client** is the term used to refer to an individual who seeks the services of a PT to maintain health or a business that hires a PT for consultation.[3] The latter area of involvement has become more significant in the recent development of the profession.

In addition to identifying the activities of a PT, the definition states that physical therapy is "provided by or under the direction and supervision of a physical therapist." This qualification is further stipulated in a section of another policy (adopted by the House of Delegates, the highest policy-making body of the APTA) specifying that PTs and physical therapist assistants (PTAs) working

BOX 1-1 *Guidelines: Physical Therapist Scope of Practice*

Physical therapy, which is limited to the care and services provided by or under the direction and supervision of a physical therapist, includes:

1. Examining (history, systems review, and test and measures) individuals with impairments, functional limitations, and disability or other health-related conditions in order to determine a diagnosis, prognosis, and intervention; tests and measures may include the following:
   - Aerobic capacity/endurance.
   - Anthropometric characteristics.
   - Arousal, attention, and cognition.
   - Assistive and adaptive devices.
   - Circulation (arterial, venous, and lymphatic).
   - Cranial and peripheral nerve integrity.
   - Environmental, home, and work (job/school/play) barriers.
   - Ergonomics and body mechanics.
   - Gait, locomotion, and balance.
   - Integumentary integrity.
   - Joint integrity and mobility.
   - Motor function (motor control and learning).
   - Muscle performance (including strength, power, and endurance).
   - Neuromotor development and sensory integration.
   - Orthotic, protective, and supportive devices.
   - Pain.
   - Posture.
   - Prosthetic requirements.
   - Range of motion (including muscle length).
   - Reflex integrity.
   - Self-care and home management (including activities of daily living and instrumental activities of daily living).
   - Sensory integrity.
   - Ventilation, and respiration/gas exchange.
   - Work (job/school/play), community, leisure integration or reintegration (including instrumental activities of daily living).
2. Alleviating impairment and functional limitation by designing, implementing, and modifying therapeutic interventions that include, but are not limited to:
   - Coordination, communication, and documentation.
   - Patient/client-related instruction.
   - Therapeutic exercise.
   - Functional training in self-care and home management (including activities of daily living and instrumental activities of daily living).
   - Functional training in work (job/school/play) and community and leisure integration or reintegration activities (including instrumental activities of daily living, work hardening, and work conditioning).
   - Manual therapy techniques (including mobilization/manipulation).

Continued

BOX 1-1 *Guidelines: Physical Therapist Scope of Practice—cont'd*

- Prescription, application, and, as appropriate, fabrication of devices and equipment (assistive, adaptive, orthotic, protective, supportive, and prosthetic).
- Airway clearance techniques.
- Integumentary repair and protection techniques.
- Electrotherapeutic modalities.
- Physical agents and mechanical modalities.
- Dry needling.

3. Preventing injury, impairment, functional limitation, and disability, including the promotion and maintenance of health, wellness, fitness, and quality of life in all age populations.
4. Engaging in consultation, education, and research.

From *Guidelines: Physical Therapist Scope of Practice*, BOD G03-01-09-29. Board of Directors Standards, Positions, Guidelines, Policies, and Procedures. Alexandria, VA, American Physical Therapy Association, 2009.

BOX 1-2 *Provision of Physical Therapy Interventions and Related Tasks*

Physical therapists are the only professionals who provide physical therapy interventions. Physical therapist assistants are the only individuals who provide selected physical therapy interventions under the direction and at least general supervision of the physical therapist.

From *Provision of Physical Therapy Interventions and Related Tasks*, HOD P06-00-17-28. House of Delegates Standards, Policies, Positions, and Guidelines. Alexandria, VA, American Physical Therapy Association, 2009.

under the direction of a PT are the only individuals who provide physical therapy (Box 1-2; see Chapter 3 for a comprehensive description of the background and role of the PTA.).[4]

PHYSICAL THERAPY AS A PROFESSION

The definition of physical therapy provides a broad description of the scope of practice of physical therapy. A companion document addresses physical therapy as a profession (Box 1-3).[5] This position was adopted by the House of Delegates of the APTA in 1983 and was subsequently revised to incorporate *Guide* language. Although the position states, "Physical therapy is a health profession...," it does not offer a spectrum of characteristic evidence to support this statement. Perhaps one reason is the difficulty in conclusively defining a profession.

Swisher and Page[6] presented a comprehensive review of the variety of descriptions of a profession. They addressed definitions based on a description of characteristics, stages of evolution, or power, but they focused on three qualities commonly held in high regard: autonomy, ethical standards, and accountability. Distinct applications of these qualities were made to physical therapy.

BOX 1-3 *Position on Physical Therapy as a Health Profession*

Physical therapy is a health profession whose primary purpose is the promotion of optimal health and function. This purpose is accomplished through the application of scientific principles to the processes of examination, evaluation, diagnosis, prognosis, and intervention to prevent or remediate impairments, functional limitations, and disabilities as related to movement and health.

Physical therapy encompasses areas of specialized competence and includes the development of new principles and applications to meet existing and emerging health needs. Other professional activities that serve the purpose of physical therapy are research, education, consultation, and administration.

From *Physical Therapy as a Health Profession*, HOD P06-99-19-23. House of Delegates Standards, Policies, Positions, and Guidelines. Alexandria, VA, American Physical Therapy Association, 2009.

Moore[7] also included autonomy in a description of a profession and positioned it at the peak of a hierarchy of characteristics (Figure 1-1). This description is particularly applicable to physical therapy. The first characteristic, a lifetime commitment requiring an individual's dedication to the profession, is formidable yet admirable. PTs and PTAs do not commonly leave this profession. The second

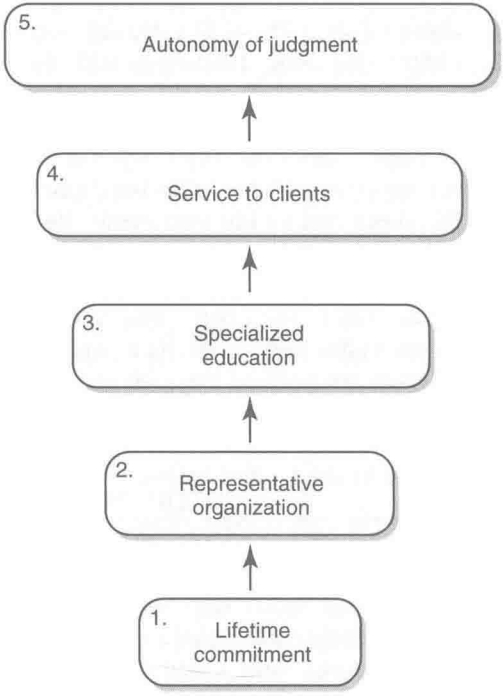

Figure 1-1 ■ Hierarchy of the criteria to define a profession.

characteristic, a representative organization, provides standards, regulations, structure, and a vehicle for communication. In physical therapy, this characteristic is fulfilled by the APTA. The third characteristic, specialized education, ensures competency to practice. For example, standards for the accreditation of physical therapist education programs (effective January 1, 2016) stipulate that the institution awards the Doctor of Physical Therapy (DPT) degree and standards for accreditation of PTA education programs stipulate that the institution awards the associate degree.[8,9] The fourth characteristic, service to clients, is obvious in physical therapy and provides a direct benefit to society. In this context, the term *patients* would also apply. The final feature, autonomy of judgment, applies regardless of whether the therapist practices in a jurisdiction where a physician's referral is required by law. Independent and accurate judgment is inherent in every evaluation, plan of care, and discharge plan conducted by the PT. This last criterion is frequently used to distinguish a professional from a technician (an individual who requires supervision).

As a profession, physical therapy is guided by the criteria listed in Figure 1-1. Such was not always the case, and evolution of the profession has entailed significant change and varying degrees of recognition from other professions. The next section provides a brief overview of the history of physical therapy, particularly as it developed in the United States.

HISTORICAL DEVELOPMENT

Examining the origin and development of the profession and practice of physical therapy in the United States will serve to explain some of the current characteristics and conditions. It will also demonstrate how certain positions have changed over time. The reader is referred to the resources at the end of this chapter for more detailed historical accounts.

ORIGINS OF PHYSICAL THERAPY

Granger[10] described how physical measures were used in ancient civilizations to relieve pain and improve function. Massage was used by the Chinese in 3000 BC, described by Hippocrates in 460 BC, modified by the Romans, and accepted as a scientific procedure in the early 1800s. Techniques of muscle reeducation developed from this evolution. Hydrotherapy was practiced by the Greeks and Romans through the use of baths and river worship. The development of electrotherapy began in the 1600s with the introduction of electricity and electrical devices.

More modern techniques of physical therapy were practiced extensively in Europe, particularly England and France, before being used in the United States. It took the outbreak of polio epidemics and World War I to bring these techniques to the United States.

IMPACT OF WORLD WAR I AND POLIO

It is unfortunate that the impetus to develop physical therapy in this country was the response to widespread suffering; at the same time, such an origin demonstrates the direct humanitarian motivation that serves as the foundation of physical therapy. First came the epidemics of polio (poliomyelitis or infantile paralysis) in 1894, 1914, and 1916, which left tens of thousands of children paralyzed and in need of "physical therapy." Then at the outbreak of World War I,