Physical Therapy Management of Low Back Pain

A Case-Based Approach

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Preface

Back pain, put simply, is a universal human problem for which there exists no magic bullet. There are many therapeutic options for patients and many practitioners who claim to have the answer to the conundrum of back pain. A quick search for treatment yields options that include surgery, injection, medication, exercise, and practitioners who range from physicians and physical therapists to acupuncturists and yoga teachers. The array of options can be confusing to both patient and provider. Within physical therapy, approaches to the problem of back pain are also numerous. As physical therapist educators, we are challenged by the task of introducing our students to the vast assortment of physical therapy approaches to lower back pain (LBP), some of which have sound scientific rationale and others that do not. Our goal in writing this book was to provide a resource on the models that are used in physical therapy to treat acute low back pain using the example of a single patient case. The book is intended primarily for students entering the profession of physical therapy but may also be of interest to practitioners trying to understand the array of intervention options used in physical therapy. Both students and clinicians are encouraged to further their knowledge in these approaches by reading the primary sources cited or by attending continuing education courses.

We are indebted to our own students who pushed us to pull all of this material into one text. These students always returned from their clinical experiences asking us to explain why two therapists in two different clinics would treat the same patient so differently. To those students we can finally say that we have some of the answers and they are in this book.

Acknowledgments

When I look up at the full moon, I know that the full moon is there. And I want only to focus my attention, my whole attention, on the presence of the full moon. So I take an in-breath and I say, "full moon." And then full moon suddenly reveals herself to me very clearly. There's only the full moon at that moment. And when I breathe out, I smile and say, "Thank you for being there." So, I and the full moon were very real in that moment. And I repeat, I do it two, three, four times, and my happiness increases all the time. I feel very alive in that moment.

—From a dharma talk by the Venerable Thich Nhat Hanh entitled "Be Like the Earth" given at Plum Village on July 23, 1996.

Thank you for being there:

Patricia, Saadya, and Nava, my family, the keepers of my heart

My friends and colleagues at Springfield College

Regina Kaufman, who inspires and critiques in the same breath

David Miller, a leader I am always following

Gail Stern and Esther Haskvitz, my fan club

Phyllis, for helping birth this baby and many others

—Julia Chevan

There are so many people who deserve my heartfelt thanks for helping this book come to fruition:

Thank you to my colleague and coeditor Julia Chevan for conceiving the idea for this book and for her expertise, professionalism, and sense of humor throughout the process. I can't imagine working with a better partner.

Thank you to each of the chapter authors. I have been honored to work with such brilliant clinicians and I am keenly aware that this project would not have been possible without their expertise.

Thank you to my students and colleagues at American International College who have inspired and supported me, especially Gail Stern and Sue Davis for their never-ending encouragement and enthusiasm.

A special thanks and dedication to my parents who are, quite simply, the greatest teachers I've ever had, and to my family for their daily love and support.

Finally, thank you to the individual pioneers of our profession who developed the models we have presented in this book. It is through their contributions that we have been able to so greatly impact the lives of our patients.

—Phyillis Clapis

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Julia Chevan graduated with a BS degree in physical therapy from Boston University in 1985. Since that time, she has worked in a variety of clinical settings mostly focused on providing care for patients with orthopedic problems. In 1993 she joined the faculty of Springfield College where she now serves as Professor and Chair in the Department of Physical Therapy. Julia is a board-certified clinical specialist in orthopedic physical therapy through the American Board of Physical Therapy Specialties and has passed the credentialing examination with the McKenzie Institute. Her academic background includes advanced degrees in public health from the University of Massachusetts, in orthopedic physical therapy from Quinnipiac University, and a doctoral degree in health studies from Virginia Commonwealth University. Julia's research interests have drawn her into examining health services issues related to the care of persons with low back and neck pain. In addition to her professional life, Julia is the mother and soccer coach for two young children who can almost run faster than she can. She is the partner of Patricia Jung, a physical therapist of exceptional ability who can run as fast as anyone.

Phyllis A. Clapis has been practicing in the area of orthopedic physical therapy for over 25 years. She graduated with a BS degree in physical therapy from University of Connecticut in 1983 and received her Master's degree in orthopedic physical therapy from Quinnipiac University in 1994. In 2004 she received a doctorate in health science from the University of St. Augustine. She started her academic career in 1996 at American International College where she currently serves as an Associate Professor in the Division of Physical Therapy. Her teaching focus includes spinal and extremity orthope-

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Introduction

In the United States, considerable resources are allocated to care related to back pain. Annual expenditures have been estimated to reach the sum of $86 billion per year.[1] Worse, the trend in dollars expended for spine problems, based on data from 1997–2006, indicates that we spend more money each year on care for this condition.[2] Despite the wide variety of treatment options available, the cost of work-related disability continues to rise.[3] For physicians, treatment of low back pain has remained a challenge since most patients with low back pain lack a specific pathoanatomic diagnosis.[4] The term "nonspecific low back pain" has been coined to describe these patients whose pain is of unknown origin.

Physical therapists have also been challenged by the treatment of patients with nonspecific low back pain. These patients make up the majority of an outpatient physical therapist's case load.[5] Some therapists are intimidated by the seemingly complex signs and symptoms that accompany patients with back pain while others pride themselves in being so-called "spine specialists."

Today, physical therapy interventions for low back pain are wide and varied, but that was not always the case. During World War I, the first physical therapists, better known then as reconstruction aides, provided simple treatments such as exercise, hydrotherapy, and massage to wounded veterans. Physical therapy was prescription-based; the physician examined the patient and provided the therapist with detailed orders for each intervention, including parameters for duration, frequency, and intensity. Physical therapists were not allowed to evaluate their patients and any form of independent thinking was viewed as a challenge to the authority of the physician. Most patients received the same treatment for the same diagnosis. The profession grew from one that was focused on polio and postwar injuries to

one that provided intervention for multiple diseases ranging from cardiovascular and pulmonary conditions to neurology and orthopedic conditions.[6] The 1960s and 1970s heralded an era of growth in the area of orthopedic physical therapy and a growth in the approaches that therapists used for treating low back pain from physician-based approaches to approaches developed and tested by physical therapists.

During the prescription-based era of physical therapy, the primary form of exercise prescribed for patients with low back pain was "William's Flexion Exercises." These exercises, named after Dr. Paul C. Williams, were designed to both improve trunk stability while promoting flexibility of the hip flexors and the lumbar extensor muscles. According to Williams, the first rule for those who suffered from back pain was to reduce the lumbar lordosis to a minimum.[7] Williams' work in the U.S. was contrasted with the work being done by Dr. James Cyriax who opened a department of massage and manipulation at St. Thomas' Hospital in London in which methods of massage and manipulation were carried out by physiotherapists working under the auspices of orthopedic physicians.

In the early 1950s and 1960s, Freddy Kaltenborn, a Norwegian physical therapist developed an approach to manual therapy and back care treatment that was based on normalizing joint movement. Kaltenborn was not the only physical therapist working on a manual approach to back pain. As orthopedic physical therapy grew, the work of a number of these early manual therapists including Freddy Kaltenborn, Mariano Rocobado, and Geoffrey Maitland diffused into the United States.[8] In 1970, Cyriax, Kaltenborn, and an internationally representative group of therapists formed the International Federation of Orthopaedic Manipulative Therapists, bringing many schools of thought and approaches to manual therapy and spine treatment together in one association. In parallel, 1974 saw the founding of the Orthopaedic Section of the American Physical Therapy Association (APTA) in the United States, led by Stanley Paris. At this point, the astute student should note the parallel between the names we are mentioning in this brief history and the names associated with the models presented in subsequent chapters of this book.

The 1980s brought a paradigm shift to the treatment of LBP when Robin McKenzie, a New Zealand physical therapist, introduced the radical notion that extension, not flexion, was the preferred direction of movement for managing acute back pain. He suggested that excessive flexion was actually the cause of one's low back pain and that most back pain was caused by an accumulation of fluid in the disc. In terms of treatment, now physical therapists were either teaching patients how to reduce their lordosis or how to

increase it. Ultimately in an era of prescription-based care, it was still the physician's call.

The 1980s also saw an expanded role for the U.S. physical therapist and the end to prescription-based physical therapy. In 1984, the APTA House of Delegates passed a motion that allowed physical therapists to evaluate and treat patients. This solidified physical therapy as a true profession, with its own defined body of knowledge and autonomy. With this newfound role came the ability to evaluate patients and render a diagnosis. The challenge, however, was to differentiate a diagnosis made by a physical therapist from one made by a physician. While the early definition of the term "diagnosis" took on many shapes, it was ultimately adopted by the APTA and is described in the *Guide to Physical Therapist Practice* as "both the process and the end result of evaluating examination data which the physical therapist organizes into defined clusters, syndromes, or categories to help determine prognosis (including plan of care) and the most appropriate intervention strategies." The key point here is that a diagnosis made by a physical therapist is meant to describe problems in terms of the disablement model in categories that guide treatment. The role and purpose of diagnosis by physical therapists was also clarified by Anthony Delitto and Lynn Snyder-Mackler[9] who stated:

> *The classic medical diagnosis can be defined as identifying a patient's disease by its signs, symptoms, and laboratory data, and the other general definition, which we believe to be synonymous with clinical classification, entails placing a label on clusters of clinical data.*

As a profession that has grown into more independent modes of practice and one in which therapists were writing prescriptions rather than just filling them, there was an increased emphasis on the development of diagnostic protocols. Academics and clinicians were being challenged to develop the theory and content for these protocols that were based on a gathering of patient signs and symptoms.[10]

While it was agreed upon that the diagnostic process was meant to guide treatment, there was still little evidence on what constituted appropriate care for treatment of LBP.[11] Clinicians were often using two types of diagnostic processes to guide treatment. One, based on a pathoanatomical model, and the other, which was considered newer, was based on a classification system that would allow the clinician to identify clusters of symptoms, signs, and characteristics of patients who responded to a specific treatment.[10,11] These

diagnostic processes are the framework on which many of the approaches to LBP today are built, including a number that are presented in this book.

Years ago, an article appeared in the *Wall Street Journal* in which the writer, who had chronic knee pain, was examined by five different physical therapists and ultimately received five different treatment suggestions.[12] The author expressed some concern with the level of ambiguity amongst the therapists and concluded that "physical therapy is still as much art as science."[12] As a result of the article, our profession was scrutinized for the therapists' uncertainty and lack of agreement in managing the patient's knee symptoms.[13] There was little evidence that supported one treatment approach over the other. The general school of thought when the article was published was that the key to treating patellofemoral pain was to strengthen the vastus medialis obliquus (VMO). With the rise in evidence, we know today that VMO is not necessarily the optimal treatment strategy. The evidence-based practice movement has provided us with more scientific evidence of the impact of clinical interventions, more information on the validity of our tests and measures, and models that are based on sound scientific rationale. Given the current variety of approaches to treating back pain, what would we expect if the patient sought treatment for her low back pain? Would the patient be examined in a similar way by each of the therapists? Would the treatments be similar?

The answers to these questions are precisely what this book is about. We recruited therapists from around the world who are experts in their specified models. Our experts include Mulligan, McKenzie, and Paris certified therapists, along with many more. We selected models that were brought to our attention by our own students who, during their clinical experiences, are exposed to practice that is based both in evidence and in habit.

To write this book, each expert was provided with a hypothetical case of a patient named Joe Lores who had been experiencing LBP for 2 weeks as a result of an injury. We used the documentation template from the *Guide to Physical Therapy Practice*[14] as a means to structure the screening and examination, and to initially provide the same generic information to each therapist. This template was chosen for its ability to identify red flags that would indicate a need for immediate medical referral. Once given this basic examination information, the experts were asked what tests and measures they might require as part of their model's examination strategy. After this information was provided, each author determined a diagnosis, prognosis, and plan of care for the patient. Authors were asked to structure their work using

a plan for examination and intervention that would be employed by a therapist working under the paradigm of that model's science and theory.

While this book is intended to serve as an introduction to each of the common approaches to management of low back pain, it is no way exhaustive. It might be best to think of it as a primer, giving the reader a flavor for each approach, but not a comprehensive description of each one. We urge the reader to delve a little deeper into the information by reading the literature and attending continuing education courses that are specific to each model. Most importantly, we urge the reader to think critically about the information provided by any model or any guru claiming to have the "answer to low back pain." We are still looking. . . .

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