Spinal Control: The Rehabilitation of Back Pain, State of the Art and Science

*Paul W. Hodges, Jacek Cholewicki,
Jaap H. Van Dieën, editors*

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In 2009, a summit of international experts summarized what is known in the rapidly developing area of spine and pelvic pain. These experts were charged with identifying agreements and apparent disagreements in the understanding and interpretation of the research and their implications for clinical practice. In 2010, information from this summit was disseminated to both European and North American audiences in the form of a one-day course. In 2013, the collaborative product of this summit and one-day course—*Spinal Control: The Rehabilitation of Back Pain, State of the Art and Science*—was published.

With 29 contributors, *Spinal Control* draws from a range of experts (basic scientists and clinicians) from different disciplines, who use different research methods and have different opinions. The volume provides a platform for these authors to review where the science and clinical observations converge and where there is still some debate.

Spinal Control is a well-organized journey through theoretical models, scientific studies, and clinical experiences related to lumbar spine and pelvic pain. Its format, including the topics of the six thoughtfully divided parts, is outlined well in the introductory chapter, which acts as a guided tour of what is to come in the remainder of the book.

Part 1, “Models of the Spine,” consists of three chapters describing motor control of the spine using different conceptual models: systems science, computational models, and mechanical models. In Part 2, seven chapters discuss motor control of the spine and outline the various authors’ perspectives on the link between motor control and low back pain (LBP). Part 3 consists of three chapters that explore the influence of proprioception. The one chapter in Part 4 examines the effectiveness of exercise for chronic LBP. Part 5, titled “State-of-the-Art Reviews,” contains five chapters, each written collaboratively by the key authors, that examine the content areas from Parts 1–4. Here the authors outline what is known and agreed upon and where disagreement exists, then make recommendations for future research directions.

Part 6 consists of a single chapter, “Integrated Clinical Approach to Motor Control Interventions in Low Back and Pelvic Pain.” This 66-page chapter is the collaborative effort of six authors and highlights how integrating the different approaches to spinal control can aid in managing people with low back and pelvic pain. Unlike earlier sections, the content here comes primarily from the authors’ clinical observations. I would expect this chapter to be particularly useful for readers in clinical practice.

Each chapter of *Spinal Control* begins with a mini table of contents section and closes with a comprehensive reference list, and most include a summary or conclusion. Photographs and illustrations scattered throughout the text are clearly printed and described, though some complex figures would be clearer to the reader if they had been printed in colour. The index is plainly laid out and easy to use.

Spinal Control is a beautiful synthesis of the current state of understanding of the lumbar spine and pelvic pain. It would be a valuable resource to health care professionals with an interest in the spine, including students, teachers, and clinicians.

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Clinical Exercise Pathophysiology for Physical Therapy: Examination, Testing, and Exercise Prescription for Movement-Related Disorders

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Thorofare (NJ): Slack; 2015
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589 p., illustrated
CAD\$125.08

Dr. Debra Coglianese and her team of 22 contributing authors have put together a comprehensive clinical exercise physiology textbook for physical therapists. This book covers the spectrum of physiology and pathophysiology, from the cellular to the whole-body level, and elegantly captures the importance of exercise for assessing and managing clients with different clinical conditions. The authors, all of whom have degrees in physical therapy, provide a unique and clinically relevant perspective on exercise pathophysiology.

The book is divided into three parts. Part 1 begins with a chapter that reviews the basic physiology of the cardiovascular and respiratory systems and discusses how these systems respond to exercise; the chapters that follow cover the normal physiologic responses to exercise across the lifespan. This section lays a solid foundation so that readers can better appreciate the physiologic responses to exercise associated with different clinical conditions presented in subsequent sections.

Part 2 includes a chapter dedicated to unravelling the complexity of fatigue and deconditioning, which nicely describes

the physiologic causes of fatigue and provides an interesting and relevant historical perspective on bed rest and zero-gravity research. Another chapter in this section deals with the principles of training and exercise prescription. While this material is covered in many other textbooks, its inclusion here is helpful because it means that readers need not look to other sources on exercise prescription (e.g., American College of Sports Medicine [ACSM] guidelines). In fact, this book includes several tables summarizing well-established guidelines from the ACSM.

Part 3, the largest section of the book, deals with the physiology and pathophysiology of specific patient populations, including those with cardiovascular, peripheral vascular, respiratory, musculoskeletal, connective tissue, motor control, and multi-system disorders. Format and organizational structure are remarkably consistent, despite the range of patient populations discussed and the large number of contributing authors; each chapter first presents the basic physiology of the affected systems, then the pathophysiology, and finally the impact on clinical care, including the physical therapists' examination, testing, and treatment plan. The epidemiology of each condition is also discussed. While the breadth of conditions covered in this section precludes a detailed description of the pathophysiology of each one, the amount of material presented is appropriate and provides sufficient information for readers to understand the link to clinical care.

Most chapters are followed by detailed case studies, and these are without a doubt the best feature of this textbook. The authors have done an excellent job of linking the chapter content with the patient cases, which follow a logical format and include the International Classification of Function, Disability and Health (ICF) model of disablement.¹ Interspersed throughout

each of these very comprehensive case studies are "clinician comments" in which the therapist describes the critical thinking and decision-making process involved in the examination, testing, and treatment plan for the focal patient. Other strengths of the book include the consistent incorporation of research, the comprehensive reference lists that conclude each chapter and case study, and the clear and informative tables presented throughout.

Overall, this book is a valuable resource for students and practising clinicians who want to better understand the link between pathophysiology and exercise responses in people with different conditions, particularly those with cardiopulmonary disorders. The authors have clearly made a concerted effort to put together a user-friendly textbook that can assist the clinical decision-making process to improve the use of exercise for evaluating and managing clients with movement-related disorders.

REFERENCE

1. World Health Organization. International classification of functioning, disability and health. Geneva: The Organization; 2001.

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