

CAROLYN **KISNER** ■ LYNN ALLEN **COLBY**

# Therapeutic Exercise

FOUNDATIONS AND TECHNIQUES

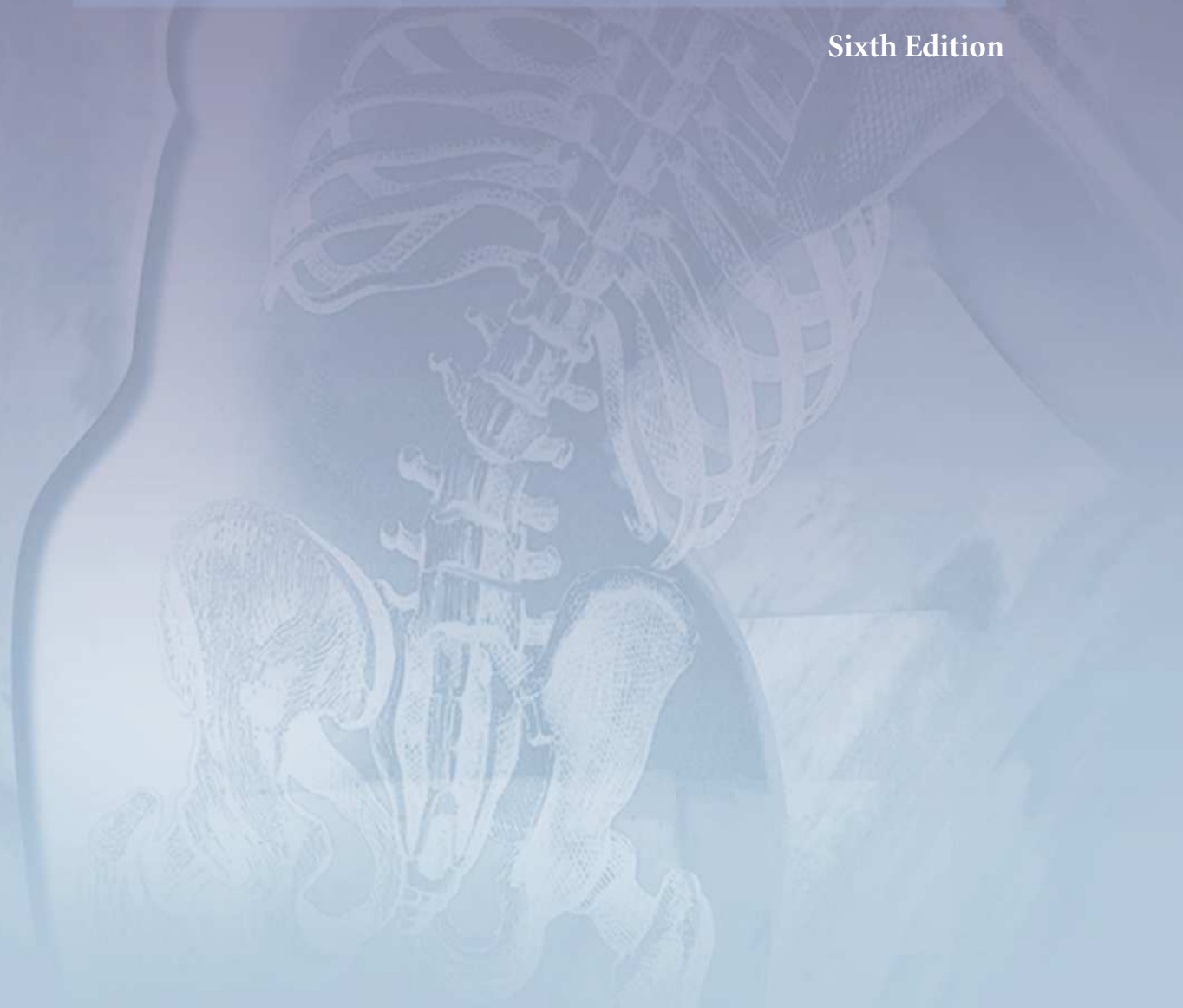
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# Therapeutic Exercise

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Sixth Edition





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# Therapeutic Exercise

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Sixth Edition

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*To Jerry and our growing family—as always, your love  
and support have sustained me through this project.*

—CK

*To Rick and my extended family—a source of constant  
support and joy.*

—LC

*In memory of our parents—who were supportive  
throughout our lives.*

*To our students—who have taught us so much.*

*To our colleagues—who have been helpful and  
stimulating in our professional growth.*

—LC and CK



# Preface to the Sixth Edition

Each edition of *Therapeutic Exercise: Foundations and Techniques* has incorporated developing trends and research in the therapeutic application of exercise. We continue this tradition in our sixth edition. This text not only provides a solid foundation in the principles and application of therapeutic exercise but also expands on this content to help the student and practitioner develop knowledge and skills in designing and implementing exercise programs that facilitate and enhance patient learning and the independence and well-being of individuals across the continuum of health.

In addition to extensive revisions and updating of content, highlights of this new edition include:

- The expanded use of highly qualified contributors. In addition to contributors for past editions of this text, who have revised or developed chapters or portions of chapters, we enlisted the assistance of several new contributors to update chapters on the spine, shoulder, knee, and lymphatic disorders. Their knowledge of current research, insights associated with their areas of specialization, and perspectives on current practice provide greater depth and breadth to this edition.
- Expansion and updating of the feature “Focus on Evidence.” Research that supports exercise outcomes is emphasized.
- The addition of a new feature called “Clinical Tips.” Throughout the text, hints for exercise applications are highlighted in order to enrich the reader’s focus.
- Integration of the language of International Classification of Functioning, Disability and Health (ICF) with the Nagi model in order to facilitate the transition to the updated World Health Organization’s health classification scheme that addresses not only impairments, activity limitations, and participation restrictions, but also health and wellness.
- The addition of spinal manipulation techniques. These interventions are now being taught in most entry-level physical therapy programs, so inclusion of principles and techniques for use in the spinal regions is a natural addition to the peripheral joint techniques.
- A new chapter on advanced functional training. Although a limited number of advanced exercises to enhance physical performance have been included in individual chapters in previous editions, it is recognized that once an individual progresses through the rehabilitation process exercises can no longer be joint specific but must incorporate integration of total body movement in order to improve functional motor skills.
- Highlighted throughout the text are links to video demonstrations of key interventions. It is recognized that visualization of the application of techniques is a useful tool for the new learner as well as the experienced therapist.

We hope our efforts with the sixth edition of this text will provide a resource for learning and professional growth of the students and healthcare practitioners who utilize therapeutic exercise.



# Acknowledgments

The foundation for this edition would not exist without the mentorship and contributions of colleagues and educators who we have acknowledged in previous editions. In addition, we wish to acknowledge and express our sincere gratitude to the following educators and clinicians, who contributed their knowledge, insights, and professional perspectives to the development of this edition.

John Borstad, PT, PhD, for review and revision of portions of Chapter 17, “The Shoulder and Shoulder Girdle.”

Elaine Bukowski, PT, DPT, MS, (D)ABDA Emeritus for revision of Chapter 9, “Aquatic Exercise.”

John DeWitt, PT, DPT, SCS, ATC, for review and contributions to Chapter 21, “The Knee.”

Karen Hock, PT, MS, CLT-LANA, for revision of Chapter 25, “Management of Lymphatic Disorders”.

Karen Holtgreffe, PT, DHS, OCS, for revision of Chapter 2, “Prevention, Health, and Wellness,” and Chapter 7, “Principles of Aerobic Exercise,” and for revising the content on fibromyalgia, myofascial pain syndrome, and osteoporosis in Chapter 11, “Joint, Connective Tissue, and Bone Disorders and Management.”

Barbara Settles Huge, PT, for her revision of Chapter 24, “Women’s Health: Obstetrics and Pelvic Floor.”

Anne Kloos, PT, PhD, NCS, and Deborah Givens, PT, PhD, DPT, for revision of Chapter 8, “Exercise for Impaired Balance.”

Jacob Thorp, PT, DHS, MTC, for review of Chapter 14, “The Spine: Structure, Function, and Posture,” and contributions to Chapter 15, “The Spine: Management Guidelines,” and Chapter 16, “The Spine: Exercise and Manipulation Interventions.”

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And once again, a special thank you to FA Davis staff, particularly to our Acquisitions Editor, Melissa Duffield, and to our Senior Developmental Editor, Jennifer Pine, both of whom helped bring the sixth edition to fruition.

# About the Authors



## **Carolyn Kisner, PT, MS**

Carolyn was a faculty member at The Ohio State University (OSU) for 27 years and was awarded Emeritus status after taking early retirement. During her tenure at OSU, she received the Excellence in Teaching award from the School of Allied Medical Professions and was recognized as Outstanding Faculty by the Sphinx and Mortarboard Honor Societies. She organized and managed

the honors and research program for the physical therapy division, managed the advanced orthopedic track in the postprofessional graduate program, and advised numerous graduate students. Carolyn then taught at the College of Mount St. Joseph in Cincinnati for 7 years. During her tenure there, she chaired the curriculum committee, which coordinated revision of the master's program and developed the entry-level doctor of physical therapy program. She was awarded the Sister Adele Clifford Excellence in Teaching at the Mount, and at the spring convocation in 2010, she was awarded the Lifetime Achievement in Physical Therapy.

Carolyn co-authored the textbook *Therapeutic Exercise* (F.A. Davis Company) with Lynn Colby, PT, MS, first published in 1985. She and Lynn have always tried to maintain current with the trends in physical therapy, which is reflected in each of the revisions of this book; they have also co-authored the pocket-sized flip book titled *Ther Ex Notes: Clinical Pocket Guide* (F.A. Davis Company). Carolyn's primary teaching experience includes medical kinesiology, orthopedic evaluation and intervention, therapeutic exercise, and manual therapy. She has presented numerous workshops on peripheral joint mobilization, spinal stabilization, kinesiology, gait, and functional exercise nationally and internationally, including multiple visits to the Philippines, Brazil,

Canada, and Mexico. Throughout her career, her active clinical involvement has been primarily in outpatient orthopedics and home health. In recognition of her achievements, Capital University in Columbus, Ohio, awarded her the Alumni Achievement Award for 2012.



## **Lynn Allen Colby, PT, MS**

Lynn is assistant professor emeritus, The Ohio State University (OSU). She received her BS in physical therapy and MS in allied medicine from OSU, Columbus, Ohio. She is co-author of the textbook *Therapeutic Exercise: Foundations and Techniques*, now in its sixth edition, and *Ther Ex Notes: Clinical Pocket Guide*.

Recently retired, she taught in the physical therapy program in the School of Allied Medical Professions (now known as the School of Health and Rehabilitation Sciences) at OSU for 35 years. As a faculty member, she also advised physical therapists enrolled in the postprofessional graduate program in allied medicine. Her primary teaching responsibilities in the physical therapy curriculum included therapeutic exercise interventions for musculoskeletal and neurological conditions and pediatric physical therapy. Experience in the clinical setting has included acute care in orthopedics, extended care in skilled nursing facilities, and inpatient and outpatient care in various pediatric settings.

During her long career in physical therapy, she was a recipient of the Excellence in Teaching Award from the School of Allied Medical Professions at OSU and was named the Ohio Physical Therapist of the Year in 2001 by the Ohio Physical Therapy Association. Most recently, she was honored by the OSU Alumni Association with the Ralph Davenport Mershon Award for Service and Leadership.



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