

Joint Structure & Function

A COMPREHENSIVE ANALYSIS

SIXTH EDITION

Pamela K. Levangie, PT, DPT, DSc, FAPTA

Professor Emerita
Department of Physical Therapy
School of Health and Rehabilitation Sciences
MGH Institute of Health Professions
Boston, Massachusetts

Cynthia C. Norkin, PT, EdD

Professor Emerita
Division of Physical Therapy
College of Health Sciences and Professions
Ohio University
Athens, Ohio

Michael D. Lewek, PT, PhD

Associate Professor
Division of Physical Therapy
Department of Allied Health Sciences
University of North Carolina at Chapel Hill
Chapel Hill, North Carolina



Contents in Brief

Section 1	Joint Structure and Function: Foundational Concepts 1	
Chapter 1	Biomechanical Applications to Joint Structure and Function 2 <i>Samuel R. Ward, PT, PhD, FAPTA Babar Shabidi, PT, PhD, DPT David B. Berry, PhD</i>	Chapter 8 The Elbow Complex 238 <i>Amy Seitz, PT, PhD, DPT, MS, OCS Jeff Hartman, PT, DPT, MPH</i>
Chapter 2	Complexity of Human Joint Design 45 <i>Susan M. Sigward, PhD, PT, ATC</i>	Chapter 9 The Wrist and Hand Complex 268 <i>Noelle M. Austin, PT, MS, CHT</i>
Chapter 3	Muscle Structure and Function 80 <i>Gary Chleboun, PT, PhD</i>	Section 4 Lower Extremity Joint Complexes 317
Section 2	Axial Skeletal Joint Complexes 107	Chapter 10 The Hip Complex 318 <i>RobRoy L. Martin PT, PhD, CSCS Benjamin Kivlan, PT, PhD, SCS, OCS</i>
Chapter 4	The Vertebral Column 108 <i>Diane Dalton, PT, DPT, OCS</i>	Chapter 11 The Knee 358 <i>Elizabeth Wellsandt, PT, DPT, PhD, OCS David S. Logerstedt, PT, PhD, MPT, MA Lynn Snyder-Mackler, PT, ATC, ScD, SCS, FAPTA</i>
Chapter 5	The Thorax and Chest Wall 163 <i>Julie Ann Starr, PT, DPT, CCS Diane Dalton, PT, DPT, OCS</i>	Chapter 12 The Ankle and Foot Complex 403 <i>RobRoy L. Martin PT, PhD, CSCS</i>
Chapter 6	The Temporomandibular Joint 180 <i>Pamela D. Ritzline, PT, EdD</i>	Section 5 Integrated Function 445
Section 3	Upper Extremity Joint Complexes 197	Chapter 13 Posture 446 <i>Lee N. Marinko, PT, ScD, OCS, OMT, FAAMPT Cynthia C. Norkin, PT, EdD</i>
Chapter 7	The Shoulder Complex 198 <i>Paula M. Ludewig, PT, PhD, FAPTA John D. Borstad, PT, PhD</i>	Chapter 14 Gait 472 <i>Michael A. Hunt, PhD, BHK, MPT, MSc Sandra J. Olney, BSc (PT&OT), PhD, MD (hon) Janice J. Eng, PhD, BSR, (PT/OT), MSc</i>
		Index 515