

SECOND EDITION

Fundamentals of the Physical Therapy Examination

Patient Interview and Tests & Measures

Stacie J. Fruth, PT, DHSc, OCS

Professor and Founding Chair
Department of Physical Therapy
College of Health and Human Services
Western Michigan University
Kalamazoo, Michigan



JONES & BARTLETT
LEARNING

World Headquarters
Jones & Bartlett Learning
5 Wall Street
Burlington, MA 01803
978-443-5000
info@jblearning.com
www.jblearning.com

Jones & Bartlett Learning books and products are available through most bookstores and online booksellers. To contact Jones & Bartlett Learning directly, call 800-832-0034, fax 978-443-8000, or visit our website, www.jblearning.com.

Substantial discounts on bulk quantities of Jones & Bartlett Learning publications are available to corporations, professional associations, and other qualified organizations. For details and specific discount information, contact the special sales department at Jones & Bartlett Learning via the above contact information or send an email to specialsales@jblearning.com.

Copyright © 2018 by Jones & Bartlett Learning, LLC, an Ascend Learning Company

All rights reserved. No part of the material protected by this copyright may be reproduced or utilized in any form, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without written permission from the copyright owner.

The content, statements, views, and opinions herein are the sole expression of the respective authors and not that of Jones & Bartlett Learning, LLC. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not constitute or imply its endorsement or recommendation by Jones & Bartlett Learning, LLC and such reference shall not be used for advertising or product endorsement purposes. All trademarks displayed are the trademarks of the parties noted herein. *Fundamentals of the Physical Therapy Examination: Patient Interview and Tests & Measures, Second Edition* is an independent publication and has not been authorized, sponsored, or otherwise approved by the owners of the trademarks or service marks referenced in this product.

There may be images in this book that feature models; these models do not necessarily endorse, represent, or participate in the activities represented in the images. Any screenshots in this product are for educational and instructive purposes only. Any individuals and scenarios featured in the case studies throughout this product may be real or fictitious, but are used for instructional purposes only.

The authors, editor, and publisher have made every effort to provide accurate information. However, they are not responsible for errors, omissions, or for any outcomes related to the use of the contents of this book and take no responsibility for the use of the products and procedures described. Treatments and side effects described in this book may not be applicable to all people; likewise, some people may require a dose or experience a side effect that is not described herein. Drugs and medical devices are discussed that may have limited availability controlled by the Food and Drug Administration (FDA) for use only in a research study or clinical trial. Research, clinical practice, and government regulations often change the accepted standard in this field. When consideration is being given to use of any drug in the clinical setting, the health care provider or reader is responsible for determining FDA status of the drug, reading the package insert, and reviewing prescribing information for the most up-to-date recommendations on dose, precautions, and contraindications, and determining the appropriate usage for the product. This is especially important in the case of drugs that are new or seldom used.

10885-9

Production Credits

VP, Executive Publisher: David D. Cella
Publisher: Cathy L. Esperti
Acquisitions Editor: Sean Fabery
Editorial Assistant: Hannah Dziezanowski
Director of Production: Jenny L. Corriveau
Director of Vendor Management: Amy Rose
Vendor Manager: Juna Abrams
VP, Manufacturing and Inventory Control: Therese Connell
Composition: Cenveo® Publisher Services
Project Management: Cenveo Publisher Services

Cover Design: Scott Moden
Director of Rights & Media: Joanna Gallant
Rights & Media Specialist: Jamey O'Quinn
Media Development Editor: Troy Liston
Cover Image: Courtesy of Stacie Fruth
Interior images: All photographs, unless otherwise noted,
courtesy of Stacie Fruth.
Printing and Binding: RR Donnelley
Cover Printing: RR Donnelley

Library of Congress Cataloging-in-Publication Data

Names: Fruth, Stacie J., author.
Title: Fundamentals of the physical therapy examination : patient interview and tests & measures / Stacie J. Fruth.
Description: Second edition. | Burlington, MA : Jones & Bartlett Learning, [2018] | Includes bibliographical references and index.
Identifiers: LCCN 2016047285 | ISBN 9781284099621 (spiral bound : alk. paper)
Subjects: | MESH: Physical Therapy Modalities | Physical Examination | Medical History Taking | Professional-Patient Relations
Classification: LCC RM701 | NLM WB 460 | DDC 615.82—dc23
LC record available at <https://lcn.loc.gov/2016047285>

6048

Printed in the United States of America
21 20 19 18 17 10 9 8 7 6 5 4 3 2 1

*To all who have appreciated, supported, encouraged (or, at minimum, tolerated)
my relatively strong tendencies toward being a nonconformist, rule bender,
boat rocker, boundary pusher, outside-the-lines colorer, status quo
challenger, and despiser of the phrase “because we’ve always
done it that way”...thank you for dancing with me.
Let's turn the music up!*

Brief Contents

© Bruce Benedict/Shutterstock, Inc.

CHAPTER 1	Introduction to the Physical Therapy Examination	1
PART I	The Patient Interview: Laying a Solid Foundation	9
CHAPTER 2	Cultivating A Therapeutic Partnership	11
CHAPTER 3	Interviewing Techniques and Communication Tools	31
CHAPTER 4	Conduct and Content of the Patient Interview	41
PART II	Tests and Measures: Building on the Foundation	75
CHAPTER 5	Introduction to Physical Therapy Tests and Measures	77
CHAPTER 6	Global Observation, Mental Functions, and Components of Mobility and Function	87
CHAPTER 7	Cardiovascular and Pulmonary Examination	145
CHAPTER 8	Integumentary Examination	175
CHAPTER 9	Musculoskeletal Examination	213
CHAPTER 10	Neuromuscular Examination	349

Contents

© Bruce Benedict/Shutterstock, Inc.

Preface	xix
New to This Edition	xxi
Acknowledgments	xxiii
About the Author	xxv
Reviewers	xxvii

CHAPTER 1 Introduction to the Physical Therapy Examination 1

Introduction	2
What is the Physical Therapy Examination?	2
The Aim of this Text	3
Organization of this Text	4
Part I. The Patient Interview: Laying a Solid Foundation	4
Part II. Tests and Measures: Building on the Foundation	4
Clinical Reasoning	5
Clinical Decision Making	5
Use of Case Examples to Enhance Learning	5
Self-Reflection	6
Suggestions to Hone Your Examination Skills	6
Final Words	7
References	7

PART I The Patient Interview: Laying a Solid Foundation 9

CHAPTER 2 Cultivating a Therapeutic Partnership 11

Introduction	12
Fundamental Considerations of Patient Interaction	12
Communication is the Key	12
The Expressive Component: Talking with Patients	13
The Receptive Component: The Importance of Listening	13
Preparation of Setting and Self	14
Preparing the Environment	14
Preparing Your Physical Self	15
Preparing Your Mental and Emotional Self	16

	Meeting Patients Where They Are	17
	Finding Your Inner Chameleon	17
	When the Need for Empathy Trumps the Clinician's Agenda	18
	The Art of Digging Deep	19
	BioPsychoSocial Aspects: Why No Two Patients Are Alike	20
	Culture	21
	Language Barriers	23
	Length of the Initial Interview	23
	Purposes of The Initial Patient Interview	24
	Chapter Summary	26
	References	27
CHAPTER 3	Interviewing Techniques and Communication Tools	31
	Introduction	32
	The Art of Effective Questioning	32
	Types of Questions	32
	Interwoven Communication Tools to Enhance Patient Responses	34
	Prompters	34
	Clarification	34
	Reflection or Echoing	34
	Reflective Feeling	34
	Paraphrasing	35
	Summarizing	35
	The Importance of Nonverbal Language	36
	Motivational Interviewing Concepts	36
	Communicating Well While Documenting	38
	Chapter Summary	39
	References	39
CHAPTER 4	Conduct and Content of the Patient Interview	41
	Introduction	42
	Conducting the Interview	43
	Flow Chart of the Interview Process	43
	Pre-Interview Tasks	44
	Review Pertinent Information	44
	Patient Observation	44
	Hand Hygiene	45
	Greeting the Patient	45
	Content of the Interview	47
	Interview Themes and Categories	47

Theme 1: Relevant Information About the Patient and the Current Condition 50

General Demographics	50
Current Condition or Chief Complaint	50
Medications	56
Laboratory and Diagnostic Tests	57

Theme 2: Relevant Information About the Patient's History 58

Past Episodes of the Current Conditions and Past Interventions	58
Past Medical and Past Surgical History	58
Family Medical History	59

Theme 3: Relevant Information About the Patient's Life and Living Environment 60

Physical Environment and Available Resources	60
Employment/Work (Job, School, and/or Play)	61
Recreation and Social Activities	61
Current and Previous Activity and Participation	62
General Health Status; Health and Social Habits	63

Final Components of the Patient Interview 65

Verbal Review of Systems	65
Patients' Goals for Physical Therapy	67
The Interview Summary	67

Documenting the Patient Interview 68

Chapter Summary 70

References 71

PART II Tests and Measures: Building on the Foundation 75

CHAPTER 5 Introduction to Physical Therapy Tests and Measures 77

Introduction 78

Transition from the Patient Interview to Performing Tests and Measures 79

What Tests and Measures are Available? 79

Choosing the Appropriate Tests and Measures 82

Content and Organization of the Remaining Chapters 84

Final Words 85

References 85

CHAPTER 6 Global Observation, Mental Functions, and Components of Mobility and Function 87

Introduction 88

Section 1: Global Observation 90

Introduction 90

Fundamental Concepts	90
Priority or Pointless?	91
Case Example	92
Section 2: Mental Functions	93
Introduction	93
Communication Assessment	93
Introduction	93
Fundamental Concepts	93
Procedure	94
Priority or Pointless?	95
Case Example	96
Section 3: Cognition Assessment	97
Introduction	97
Fundamental Concepts	97
Procedure	97
Priority or Pointless?	101
Case Example	102
Section 4: Emotional and Psychological Factors	103
Introduction	103
Fundamental Concepts	103
Procedure	105
Priority or Pointless?	107
Case Example	108
Section 5: Posture	109
Introduction	109
Fundamental Concepts	109
Procedure	112
Informal Postural Assessment	113
Formal Postural Assessment	113
Priority or Pointless?	118
Case Example	118
Section 6: Mobility And Locomotion	119
Introduction	119
Fundamental Concepts	119
Procedure	120
Priority or Pointless?	121
Case Example	122
Section 7: Gait	123
Introduction	123
Fundamental Concepts	123

Gait Characteristics and Quality	123
Gait Cycle Terminology	123
Descriptions of Common Pathological Gait Patterns	125
The Importance of Gait Speed	128
Procedure	128
Priority or Pointless?	130
Case Example	131
Section 7: Functional Assessment	132
Introduction	132
Fundamental Concepts	132
Procedure	135
Priority or Pointless?	136
Case Example	137
Chapter Summary	138
References	140
CHAPTER 7 Cardiovascular and Pulmonary Examination	145
Introduction	146
Section 1: Core Vital Signs	148
Introduction	148
Pulse	148
Fundamental Concepts	148
Procedure	149
Pulse Points	149
Assessment of Pulse	150
Respiration	150
Fundamental Concepts	150
Procedure	151
Assessment of Respiration	151
Blood Pressure	152
Fundamental Concepts	152
Equipment Used for Blood Pressure Measurement	154
Procedure	154
Assessment of Blood Pressure	154
Priority or Pointless?	156
Case Example	156
Section 2: Temperature	157
Introduction	157

Fundamental Concepts	157
Procedure	157
Priority or Pointless?	158
Case Example	158
Section 3: Edema	159
Introduction	159
Fundamental Concepts	159
Procedure	160
Assessment of Pitting Edema	160
Measurement of Edema	161
Priority or Pointless?	162
Case Example	162
Section 4: Oxygen Saturation	163
Introduction	163
Fundamental Concepts	163
Procedure	164
Priority or Pointless?	165
Case Example	165
Section 5: Ankle-Brachial Index	166
Introduction	166
Fundamental Concepts	166
Procedure	166
Priority or Pointless?	167
Case Example	167
Section 6: Other Common Cardiovascular and Pulmonary Tests and Measures	169
Introduction	169
Rating of Perceived Exertion	169
Six-Minute Walk Test	169
Chapter Summary	170
References	171
CHAPTER 8 Integumentary Examination	175
Introduction	176
Section 1: Examination of the Skin	178
Introduction	178
Fundamental Concepts	178
Screening Inspection of the Skin	179
Color	179
Temperature	180
Texture	180

Moisture	180
Turgor	180
Edema and Effusion	180
Malignancies of the Skin	180
Screening Inspection of the Hair and Nails	181
Hair	182
Nails	182
Signs of Inflammation and Infection	184
Priority or Pointless?	185
Case Example	185
Section 2: Identification of Pressure Ulcers	186
Introduction	186
Fundamental Concepts	186
Risk Factors for Pressure Ulcer Development	186
Common Locations of Pressure Ulcers	186
Procedures to Identify Potential and Active Pressure Ulcers	186
Identification of Areas at Risk	186
Classification of Pressure Ulcers	188
Priority or Pointless?	190
Case Example	190
Section 3: Identification of Vascular Ulcers	191
Introduction	191
Fundamental Concepts	191
Arterial Insufficiency	191
Venous Insufficiency	191
Procedures to Identify Vascular Insufficiency	192
Assessment of Peripheral Pulses	194
Venous Filling Time	195
Capillary Refill Time	195
Ankle-Brachial Index and Toe-Brachial Index	195
Pitting Edema	195
Priority or Pointless?	195
Case Example	196
Section 4: Identification of Neuropathic Ulcers	197
Introduction	197
Fundamental Concepts	197
Diabetic Neuropathy	197
Diabetes and Vascular Disease	198

Procedures to Identify Neuropathy and Active Diabetic Ulcers	198
Observation and Palpation	198
Sensory Examination	199
Peripheral Vascular Examination	199
Describing and Classifying Diabetic Wounds	200
Priority or Pointless?	201
Case Example	202
Section 5: Other Wounds and Burns	203
Introduction	203
Fundamental Concepts	203
Skin Tears	203
Surgical Wounds	203
Burns	204
Case Example	206
Chapter Summary	207
References	208

CHAPTER 9 Musculoskeletal Examination 213

INTRODUCTION	214
Section 1: Range of Motion: Gross Screen	215
Introduction	215
Fundamental Concepts	215
Active Range of Motion	215
Limited Active Range of Motion	216
Passive Range of Motion	217
Joint End Feel	218
Quantifying Gross AROM and PROM	219
Documenting Estimated ROM	219
Procedure	220
Performing Passive ROM Screen	231
Priority or Pointless?	233
Case Example	233
Section 2: Range of Motion: Goniometry	235
Introduction	235
Fundamental Concepts	235
Goniometric Devices	235
Goniometric Techniques	236
Functional Range of Motion	238
Procedure	238

Priority or Pointless?	263
Case Example	263
Section 3: Muscle Length	265
Introduction	265
Fundamental Concepts	265
Procedure	266
Priority or Pointless?	276
Case Example	277
Section 4: Gross Muscle Strength	278
Introduction	278
Fundamental Concepts	278
Grading of Gross Strength	279
Procedure	279
Priority or Pointless?	289
Case Example	290
Section 5: Manual Muscle Testing	291
Introduction	291
Fundamental Concepts	292
Procedure	293
Grading Manual Muscle Testing	294
Priority or Pointless?	336
Case Example	337
Section 6: Palpation	339
Introduction	339
Fundamental Concepts	339
Procedure	340
Priority or Pointless?	342
Case Example	342
Chapter Summary	343
References	346
CHAPTER 10 Neuromuscular Examination	349
Introduction	350
Section 1: Somatosensory Function	351
Introduction	351
Fundamental Concepts	351
Procedure	354
Light Touch	354
Protective Sensation	354
Pain (Sharp/Dull Test)	356

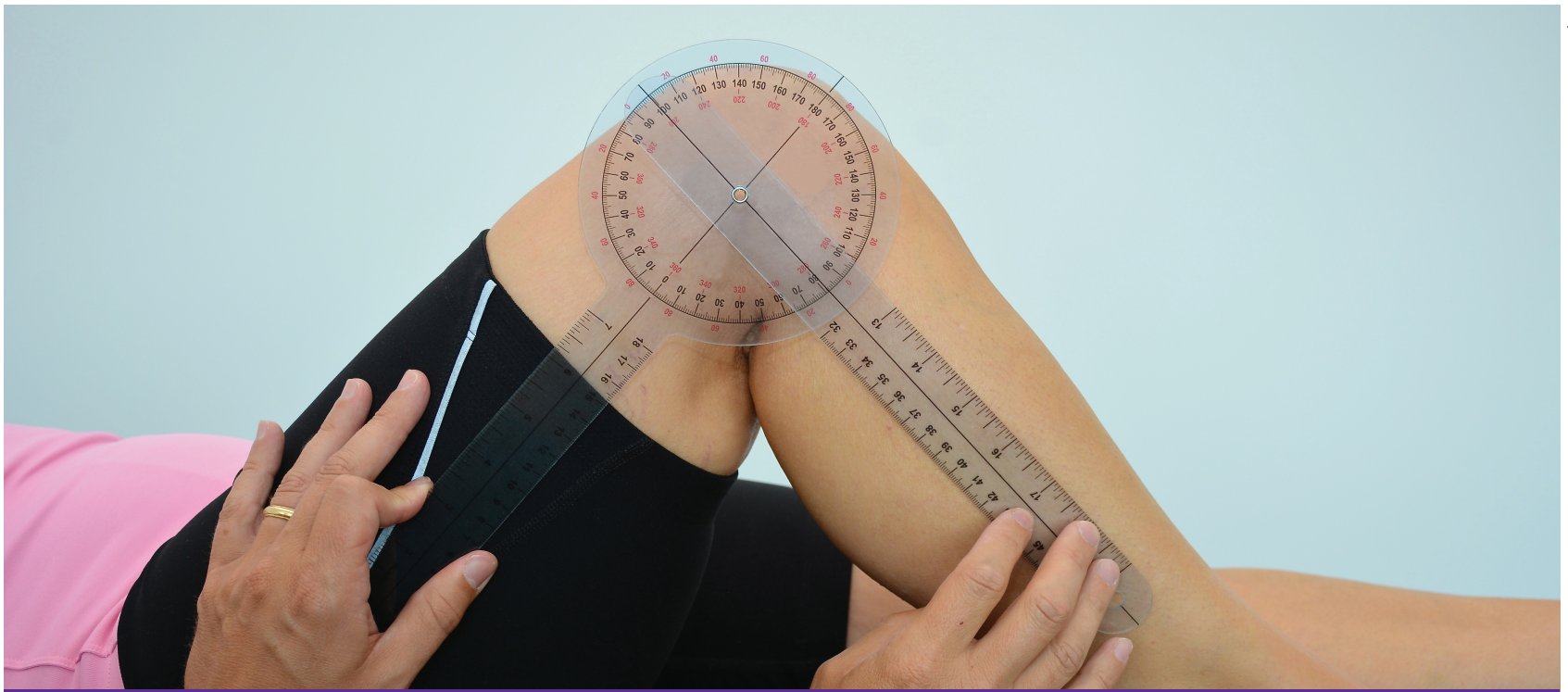
Vibration	357
Temperature	357
Position Sense	358
Discriminative Sensation	359
Priority or Pointless?	361
Case Example	362
Section 2: Spinal Nerve Root Integrity	363
Introduction	363
Fundamental Concepts	363
Dermatomes	363
Myotomes	364
Procedure	364
Dermatomes	364
Myotomes	365
Priority or Pointless?	369
Case Example	370
Section 3: Deep Tendon Reflexes	371
Introduction	371
Fundamental Concepts	371
Hypotonic DTRs	371
Hypertonic DTRs	372
Procedure	372
Priority or Pointless?	375
Case Example	376
Section 4: Coordination	377
Introduction	377
Fundamental Concepts	377
Procedure	377
Upper Extremity Tests	378
Lower Extremity Tests	378
Priority or Pointless?	380
Case Example	381
Section 5: Balance	382
Introduction	382
Fundamental Concepts	382
Sensory System	382
Sensorimotor Integration	383
Motor Output	383
The Role of Cognition	384

Procedure	384
Confidence in Balance	384
Seated Balance	384
Static Standing Balance Tests	385
Reactive Balance Tests	386
Anticipatory Balance Tests	386
Dynamic Balance Tests	387
Priority or Pointless?	389
Case Example	390
Section 6: Cranial Nerve Assessment	391
Introduction	391
Fundamental Concepts	391
Procedure	392
Priority or Pointless?	396
Case Example	396
Section 7: Upper Motor Neuron Tests	397
Introduction	397
Fundamental Concepts	397
Muscle Tone	397
Procedure	399
Testing for Spasticity	399
Deep Tendon Reflexes	399
Clonus Testing	400
Pronator Drift	400
Pathological Superficial Reflexes	401
Priority or Pointless?	403
Case Example	404
Chapter Summary	405
References	407

APPENDIX A 411

APPENDIX B 419

INDEX 423



Preface

It's now been 12 years since I embarked on my journey into academia and took on the course sequence titled Generic Examination I and II in the Doctor of Physical Therapy program at the University of Indianapolis. The name of those courses drove me crazy (until we changed them several years later), but I was thrilled to have the opportunity to teach that content: the “generic” skills required to conduct a basic physical therapy examination with a wide variety of patients. Teaching the clinical stuff is fun, right? But then came the realization that I was responsible for teaching content that would affect each student's ability to perform one of the most vital components of a physical therapist's practice: a thorough, concise, and meaningful patient examination.

Despite an extensive search for a textbook I could use in these courses, not one title emerged. Not one. There were several texts that covered advanced tests and measures, and others that dealt with examination techniques specific to a certain genre of patients. But it seemed as though nothing existed that covered the skills necessary for a novice student to learn the art and science of conducting both the interview and the tests/measures components of an initial examination with a variety of patients. So, I simply started creating my own. What began as a 38-page course packet aimed at providing students with rudimentary “how to” information gradually evolved into something that loosely resembled a

textbook (always with a purple cover, for those who are curious). And then—this part is blurry—the first edition of *Fundamentals of the Physical Therapy Examination* happened.

Let me tell you how odd it is to reference your own textbook while you're teaching—to see students leaf through the pages of text and pictures you somehow put together. That said, it is a hair comforting to know that no one knows the content of the textbook you're using better than you! The feedback (both positive and less) I got from my students about the first edition was incredibly valuable. I also received great input about the content, layout, and utility of the text from students and faculty across the country, and every bit of that feedback was considered when the second edition was written.

The essential purpose of *Fundamentals of the Physical Therapy Examination: Patient Interview and Tests & Measures* has not changed from the first edition: provide novice-to-intermediate students of physical therapy with a resource that can be used both in the classroom and in the clinic to help them learn methods of collecting meaningful verbal, observational, and measured data from any patient, regardless of setting or diagnosis. It is also designed as a resource for physical therapy faculty who, like me, had been searching for a text that covers this broad content in a classroom-friendly way. This text is intended for active use! Students

are encouraged to highlight content, write notes in it, frequent the online resources to watch the how-to videos, and take it along during clinical experiences. Faculty are encouraged to use the multitude of short case examples as classroom talking points, utilize the step-by-step instructions of how to perform each test/measure (while emphasizing the need to adapt based on individual patient needs), and show the accompanying technique-based videos to complement classroom instruction.

What makes this text different from most is that it does not ask the reader to learn methods of examining a particular body region or a specific condition. Instead, common interview questions and a myriad of physical tests/measures are described, and the reader is asked to consider which questions and which tests/measures are appropriate for *any* given patient. As experienced clinicians well know, “text-book” patients are few and far between. Physical therapists must have the knowledge and confidence to assess problems or conditions that may be outside any given patient’s presenting diagnosis. This text encourages students to understand that it is never too early to learn this essential skill of clinical decision making.

The first chapter of this text describes the global concepts and content of the remaining chapters, which are presented in two interrelated parts. Part I (Laying a Solid Foundation) focuses on what many clinicians would argue is the most important part of the patient examination: the initial interview. Chapters 2 and 3 discuss the vital aspects of creating rapport and an environment of trust, using a variety of communication tools, understanding the influence of biopsychosocial and cultural factors, recognizing personal biases, and appreciating the need to meet patients where they are. Chapter 4 then provides a thorough description of categories, types, and examples of interview questions. A “priority/possible/pointless” clinical decision-making system is introduced, encouraging and empowering students to embrace this essential component of an autonomous profession.

Part II (Building on the Foundation) begins with a chapter describing the transition from patient interview to performance of tests and measures. Emphasis is placed

on the importance of using information gathered from the interview to guide decisions about which tests/measures are appropriate. The remaining chapters describe the purposes and techniques of fundamental tests and measures commonly utilized in patient examinations, organized in a combined body system/patient condition manner. The priority/possible/pointless system is carried through each chapter, encouraging even novice clinicians to make clinical decisions about which tests/measures are essential and which ones may be unnecessary.

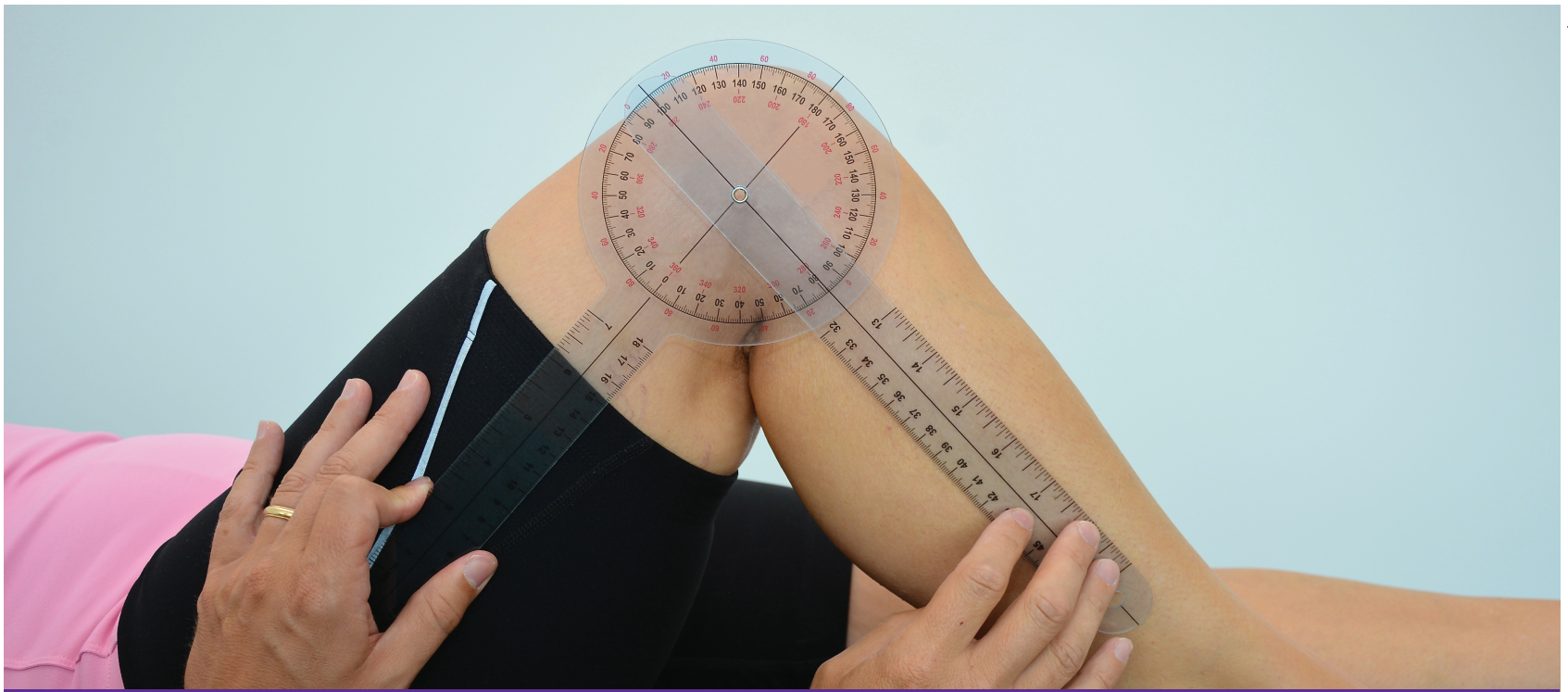
Brief case examples, accompanied by sample documentation, enable the reader to understand each test/measure in the context of a patient scenario. These cases, provided after each test/measure, are purposefully short and focused to help the reader learn how information gathered from the patient leads to the selection of particular tests/measures and documentation of the findings. Novice learners, in my experience, benefit from small, manageable examples that can later be understood in a broader sense. Even so, it is sometimes helpful to see the big picture. Therefore, I’ve included three complete cases, each describing a different genre of patient, which are woven through this edition.

Most students of physical therapy are visual or kinesthetic learners. The most requested study aid from my students has been pictures and videos of the techniques covered in class. Therefore, this text is laden with photos, and its online resources house multiple videos that demonstrate most of the tests/measures described. In addition, videos of two complete initial examinations are provided. Students may find these helpful to obtain a “big picture” view of the examination process; instructors may find it helpful to use portions of these videos to highlight particular aspects of a typical patient examination.

Finally, my love and enthusiasm for teaching this content has only grown in the past 12 years, and I hope this is conveyed throughout the text. I also hope you find this text easy and enjoyable to read and, above all, one that is truly an asset on your journey toward becoming a confident, skilled, and successful physical therapist who finds as much reward in this profession as I have.

Includes Video Access!

New copies of *Fundamentals of the Physical Therapy Examination: Patient Interview and Tests & Measures, Second Edition* include access to an extensive array of online videos demonstrating the “how to” for a wide variety of fundamental physical therapy tests and measures, such as gross strength testing, various sensory tests, reflex assessment, and examples of a number of abnormal gait patterns. Also included in the videos are two complete patient examinations (interview and tests/measures), one orthopedic and one neurological.



New to This Edition

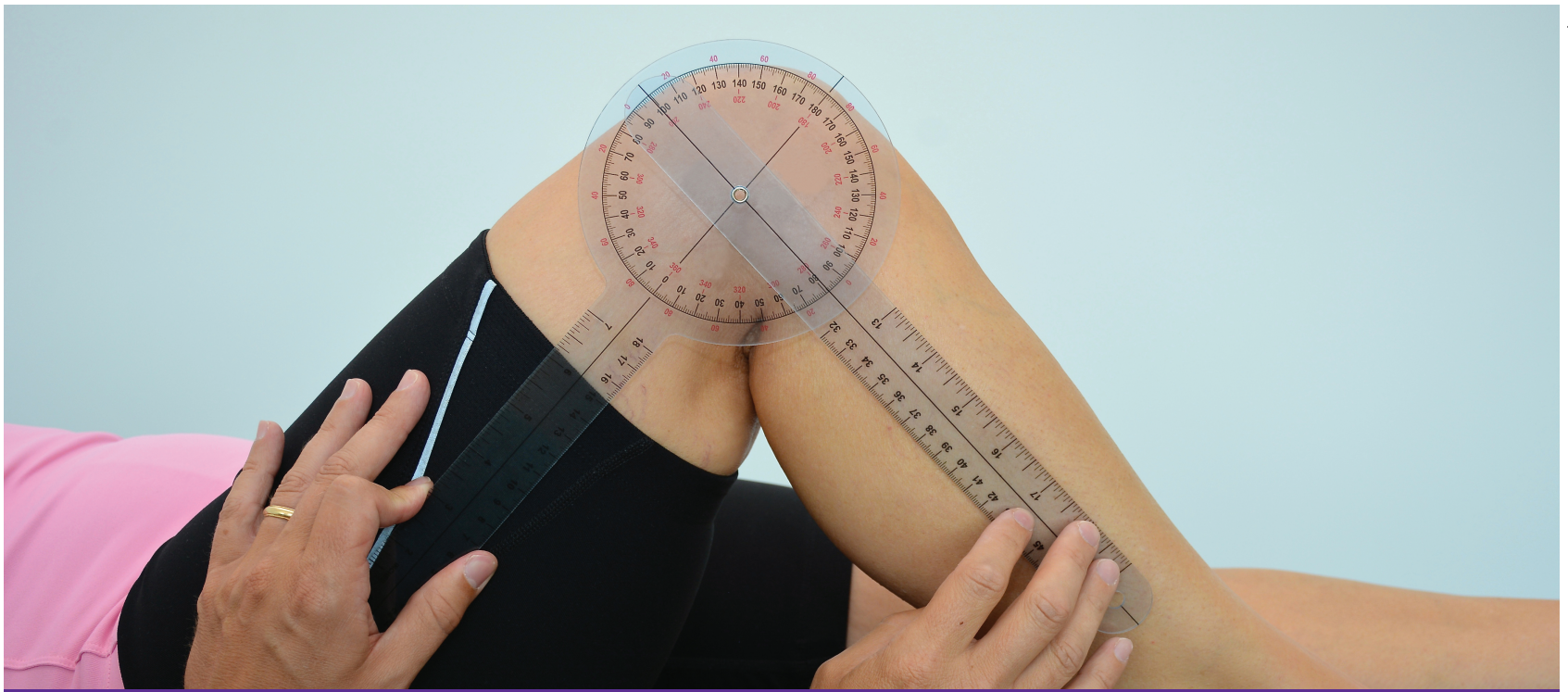
After seeking a great deal of feedback from both students and faculty, I have made some changes to the content and organization of the text for this second edition. The most common question (or request) I received was regarding content specific to goniometry and manual muscle testing. I purposely had not included those items in the first edition, recognizing that entire textbooks were dedicated to each one of those content areas. However, multiple faculty members encouraged me to include the basic material necessary to inform students about those techniques so that, in some cases, the need for three textbooks could be reduced to one.

In addition, students encouraged me to include more full case examples, so I opted to use three. These are first introduced at the end of Chapter 4 as documentation examples of an initial interview, then carried forward into each chapter with documentation specific to the chapter's content reflected in documentation format. The documentation excerpts are then pulled together as three full case examples in Appendix A.

The following is a more detailed list of all new or updated content in this edition:

- Updated all content related to the *Guide to Physical Therapist Practice* to reflect the revised 3.0 edition
- Placed additional emphasis on the importance of the therapist–patient relationship
- Added a section about motivational interviewing

- Added two documentation examples of the Interview (Subjective) portion of the exam at the end of Chapter 4, for a total of three examples
- Carried those three cases through the rest of the text, adding documentation examples of the Test & Measures specific to each case (summary notes for each example at the end of Chapters 6–10)
- Added information about the Systems Review to be consistent with the *Guide 3.0*
- Moved Posture and Gait content from Chapter 9 (Musculoskeletal Examination) to Chapter 6 (Global Observation, Mental Functions, and Components of Mobility and Function) to reflect that these exam techniques are conducted on most patients
- Added a section in Chapter 6 on Mobility and Locomotion to be consistent with the *Guide 3.0*
- Added Goniometry to Chapter 9
- Added Manual Muscle Testing to Chapter 9
- Moved Dermatomes, Myotomes, and Deep Tendon Reflexes from Chapter 9 to Chapter 10 under the section heading “Spinal Nerve Root Integrity”
- Added the Pronator Drift test as part of the Upper Motor Neuron tests section in Chapter 10
- Added an Appendix that contains the complete documentation examples introduced in Chapter 4 and then carried through Chapters 6–10



Acknowledgments

Countless individuals deserve my gratitude for their contributions to what is now the second edition of *Fundamentals* (or the “Purple Book,” as it’s known to every one of my students), and I can’t hope to formally thank all of them. Some, however, have taken a specific role in moving the text forward from its prior version to what I hope is “new and improved.”

I am indebted to those at Jones & Bartlett Learning, particularly my editorial and production team, for having continued faith in my vision for this book.

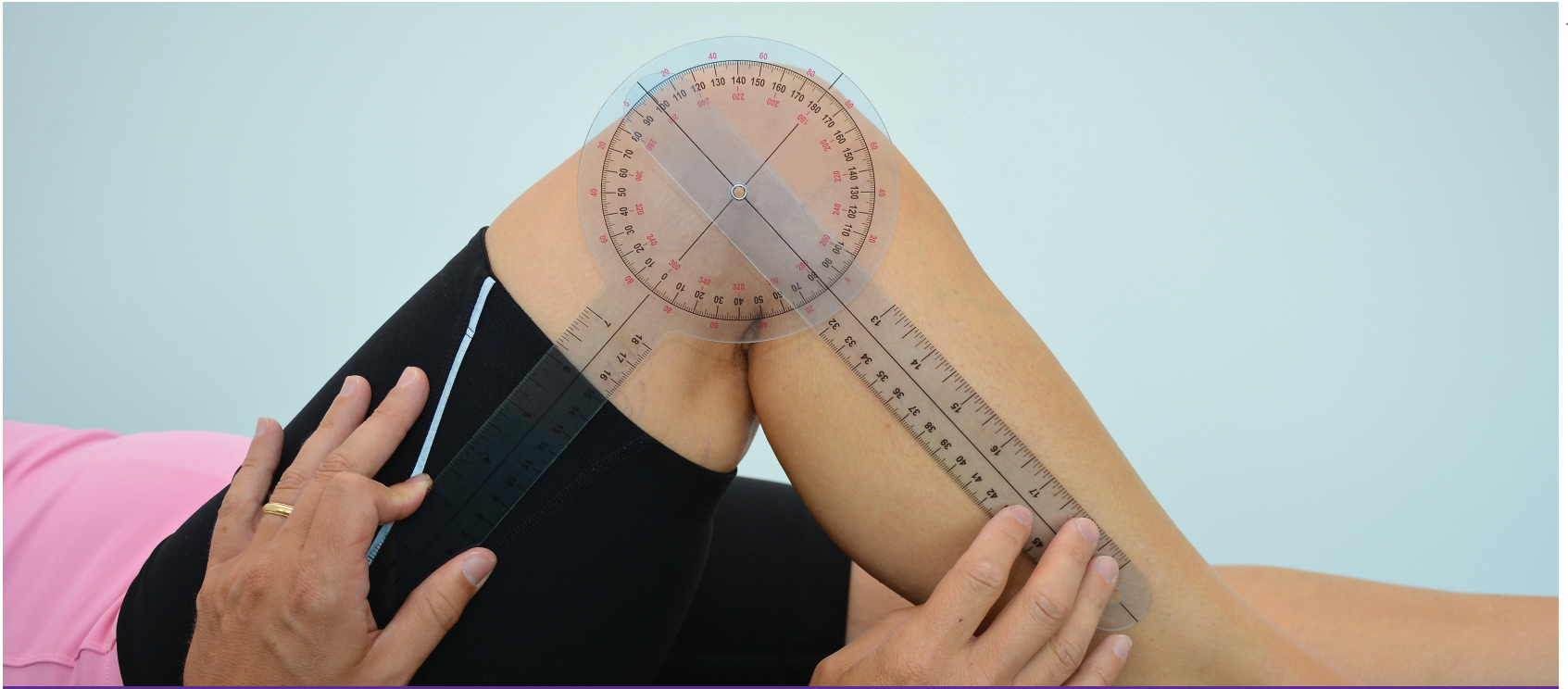
Several of my Krannert School of Physical Therapy colleagues offered substantial time and/or talent in the creation of this edition. I sincerely thank Steve Wiley, PT, PhD, GCS, for his contributions to the new content in Chapter 6 as well as the new goniometry photographs. Thanks to Anne Mejia-Downs, PT, PhD, MPH, and Emily Slaven, PT, PhD, OCS, FAAOMPT, Cert. MDT, for spending many hours serving as models in more than 200 new goniometry and manual muscle testing photographs. In addition, your support, counsel, and friendship made this second edition journey dramatically more tolerable. And to Renée Van Veld, PT, MS, who randomly read, suggested, photo modeled, brainstormed, and, without a doubt, provided the steadiest

stream of encouragement . . . thank you for the many hours of laughter, perfectly timed hugs, frequent indulgence in Mexican food (and drink), and unconditional support. Your friendship is one of the greatest blessings in my life.

I am also grateful to many of my former and current students for the assistance they provided. Some edited, some served as photo models, some offered creative ideas, and some assisted with creation of the ancillary material. Specific thanks goes to Daniel Batteiger, Allison Colligan, Troy Davis, Allison Everetts, Tim Malone, Kira Naegeli, Brian Ragano, Brooke VerSteeg, Rachel Waffle, and Jamie Wallace.

I would be remiss if I neglected to thank my UIndy colleagues, my friends, and random bystanders who agreed to be models for the multitude of new photographs in this edition.

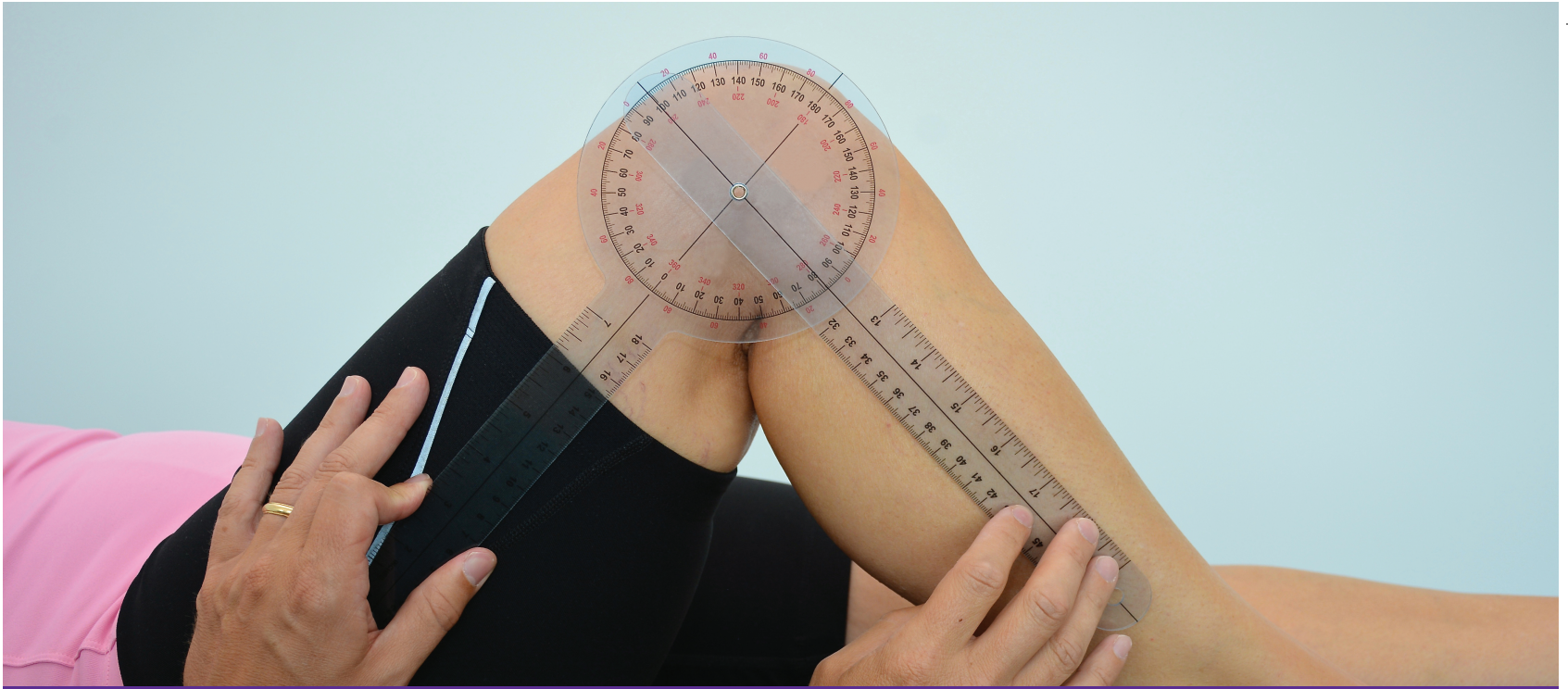
Finally, to my Krannert School of Physical Therapy family . . . I cannot hope to express what your support and friendship have meant to me over the past 12+ years. Without you, *Fundamentals* wouldn’t even exist. Collectively, you inspire, motivate, and humble me, and I simply cannot fathom finding another work family that will mean as much to me as you have. I love you all.



About the Author

Dr. Stacie J. Fruth is the founding chair and professor in the Department of Physical Therapy at Western Michigan University, where she is also the director of the Doctor of Physical Therapy program. Dr. Fruth received her Bachelor of Science degree in Kinesiology from the University of Michigan, her Master of Science degree in Exercise Science from the University of Massachusetts, her Master of Science degree in Physical Therapy from the University of Indianapolis, and her Doctor of Health Science degree from the University of Indianapolis. She also achieved Board Certification

as an Orthopedic Clinical Specialist in 2011. Since transitioning from full-time clinician to academia in 2003, Dr. Fruth has been responsible for teaching physical therapy students the fundamental clinical skills required for both patient examination and intervention. In 2009, Dr. Fruth received the Teacher of the Year award from the University of Indianapolis, where she served as a faculty member in the Krannert School of Physical Therapy for 12 years. Clinically, she has focused her practice in the emergency department of a Level I trauma hospital as well as in a pro bono clinic.



Reviewers

Tamara N. Gravano, PT, DPT, GCS, CEEAA
Director of Clinical Education
Associate Professor
School of Physical Therapy
Marshall University
Huntington, WV

Kevin Helgeson, DHSc, PT
Professor
Doctor of Physical Therapy Program
Rocky Mountain University of Health Professions
Provo, UT

Karen Holtgreffe, PT, DHS, OCS
Associate Professor
Doctor of Physical Therapy Program
College of Mount St. Joseph
Cincinnati, OH

Julie Ronnebaum, DPT, GCS, CEEAA
Assistant Professor
Doctor of Physical Therapy Program
Des Moines University
Des Moines, IA

Ann M. Wilson, PT, Med, GCS
Director of Clinical Education
Clinical Associate Professor
School of Physical Therapy
University of Puget Sound
Tacoma, WA

