

Contents

Preface vi

Acknowledgments viii

Part I ■ The Conceptual Foundation **1**

Chapter 1 What Is Back Stability? **3**

The Scope of the Problem 3

A New Look at the Etiology and Treatment of Back Pain 4

The Model Used in This Book: Lumbar Stabilization 7

Summary 13

Chapter 2 Biomechanics of the Lumbar Spine **14**

Anatomy of the Vertebral Column 14

Axial Compression 25

Movements of the Lumbar Spine and Pelvis 30

The Mechanics of Lifting 35

Lifting Methods 40

Summary 42

Chapter 3 Stabilization Mechanisms in the Lumbar Spine **43**

The Posterior Ligamentous System 43

The Thoracolumbar Fascia 44

Trunk Muscle Action 49

Intra-Abdominal Pressure Mechanism 62

Summary 65

Part II ■ Exercises for Establishing Stability **67**

Chapter 4 Teaching Your Clients the Basic Skills **69**

Teaching Your Clients to Control Pelvic Tilt 70

Teaching Your Clients to Identify and Assume
the Neutral Position 78

Teaching Your Clients to Use Abdominal Hollowing	81
Teaching Your Clients to Contract the Multifidus Muscles at Will	89
Summary	91
Chapter 5 Muscle Imbalance	92
Basic Concepts	92
Muscle Adaptation to Injury, Immobilization, and Training	96
Training Specificity	99
Changes in Muscle Length	100
Principles of Muscle Stretching	111
Stretching Target Muscles	113
Summary	118
Chapter 6 Basic Abdominal Muscle Training	120
Current Practice in Abdominal Training	120
Modifications of Traditional Abdominal Exercises	124
Ab Roller Exercises	130
Summary	133
Chapter 7 Posture	134
Optimal Postural Alignment	134
Postural Stability and Body Sway	135
Basic Postural Assessment	136
Principles of Postural Correction	143
Posture Types and How to Correct Them	145
Summary	163
Part III ■ Building Back Fitness	165
Chapter 8 Advanced Stability Training	167
Superimposed Limb Movements and Balance Boards	168
Stability Ball Exercises	186
Proprioceptive Training	197
Summary	201

**Chapter 9 More Advanced Stability Training:
Weight Training and Plyometrics** 202

Weight Training	203
Using Plyometrics to Train for Power and Speed	222
Summary	227

Part IV ■ Putting It All Together 229

**Chapter 10 Building a Back Stability Program
for Your Client** 231

Preliminary Assessment of Your Client	231
General Principles for Designing a Stability Program	234
Parallel Tracks in Designing a Stability Program	235
Designing an Advanced Stability Program	237
Summary	246

Chapter 11 Preventing Back Injuries and Reinjuries 247

Keep the Spine Vertical	247
Principles of Lifting in the Home and on the Job	248
Summary	254

Bibliography 255

Credits 263

Index 264

About the Author 272