

Contents

Illustrations	xi
Chapter 1 Structure and Function of the Lumbosacral Spine	1
Posterior Spinal Elements	12
Ligaments in Spinal Function	15
Muscles in Spinal Function	17
Intersegmental Muscles	19
Quadratus Lumborum Muscle	19
Multifidus	21
Erector Spinae Muscle	21
Static Spine	22
Muscular Subsystem: Active and Passive	26
The Kinetic Spine	27
Spinal Stability	43
Lumbar Erector Spinae Muscles	44
Muscles in Spinal Function	44
Thoracolumbar Fascia	47
Lumbar Pelvic Rhythm	54
The Spinal Nerve Roots	56
Summary	69
References	70
Chapter 2 Psychological Aspects of Low Back Pain	76
Acute Phase	85
Chronic Pain	90
References	92

Chapter 3	Examination of the Patient With Low Back Pain	94
	Techniques of Examination	95
	Examination of Muscles and Tendons	98
	Facet Pathology and Examination	98
	Examination of Lumbar Disk Pain	99
	Objective Signs Elicited in an Examination	99
	Standard Physical Examination Tests	100
	Lordosis	100
	Lumbar Kyphosis	107
	Lateral Pelvic Tilt	109
	Lumbar Flexion	111
	Lateral and Rotational Flexibility	113
	Hamstring Flexibility	113
	Strength Testing	118
	Lumbar Extension	121
	Objective Neurological Examination	121
	Neurological Determination of Nerve Root Involvement	127
	Miscellaneous Objective Tests	134
	Tests to Increase Intrathecal Pressure	137
	Milgram Test	137
	The Naffziger Test	138
	The Valsalva Maneuver	138
	The Kernig Test	138
	Confirmatory Tests for Sciatic Radiculitis	139
	Tests for Malingering	140
	References	141
Chapter 4	Musculoskeletal Pain	144
	Fatigue	145
	Fibromyalgia	145
	Pathophysiology	148
	Pathophysiology of Fibromyalgia	148
	Pathophysiology of Muscle Pain	150
	Causation of Muscle Pain	152
	References	160
Chapter 5	Lumbar Discogenic Pain	164
	Disk Disease	164
	Clinical Manifestation	172

Physical Examination: Objective Findings	179
Straight Leg Raising Test	179
Motor Testing	184
Scoliosis	186
Electromyography	186
Upper Motor Neuron Testing	187
Confirmatory Studies	187
References	188
Chapter 6 The Role of the Facets in Low Back Pain	191
Structure and Function of the Zygapophysial Joints	191
Degenerative Facet Disease	202
References	214
Chapter 7 Quantitative Measurements	217
Range of Motion	220
Muscles in Spinal Function	222
Quadratus Lumborum Muscle	223
Multifidus Muscles	224
Intersegmental Muscles	224
Thoracolumbar Fascia	224
Muscle Pain Mechanism	224
References	228
Chapter 8 Neurohormonal Aspects of Discogenic Disease	234
References	238
Chapter 9 Disability Evaluation	240
References	248
Chapter 10 Treatment Protocols for Low Back Pain Syndrome	250
Physical Modalities	264
Cryotherapy	264

Therapeutic Heat	265
Soft Tissue Modalities for Elongation	266
Analgescic Nerve Block in Treating Pain	267
Exercise in Treatment of Low Back Pain	270
Conservative Care of the Herniated Lumbar Disk ..	301
Manipulation	302
Traction	305
Ancillary Modalities	310
Transcutaneous Electrical Nerve Stimulation	311
Acupuncture	313
Epidural Analgesia	314
Pharmacologic Treatment of Low Back Pain	320
References	323
Chapter 11 Miscellaneous Lumbosacral Spine	
Conditions Causing Pain and Impairment ..	332
Spondylolysis and Spondylolisthesis	332
Symptoms	336
Treatment	337
Spinal Stenosis	340
Piriformis Syndrome	350
Clinical Symptoms and Signs	352
Treatment	353
Sacroiliac Pathology Causing Low Back Pain	354
Diagnosis of Sacroiliac Pathology	355
Treatment of Sacroiliac Pathology	355
Sacroiliac Pathology Secondary to	
Pelvic Fracture	357
Diabetic Lumbar Radiculopathy	360
Iliolumbar Syndrome	360
Sacralization of Transverse Process	361
Spinal Infections	361
Tumors	363
References	363
Index	367