

Daniels and Worthingham's

MUSCLE TESTING

Techniques of Manual Examination

8th
Edition

Helen J. Hislop
Jacqueline Montgomery



SAUNDERS
ELSEVIER

Contents

List of Plates

- Plate 1 Flexion and Extension of the Head and Neck, 17
- Plate 2 Scapular Motions, 62
- Plate 3 Cross Sections of Arm Muscles in the Chest, 85
- Plate 4 Cross Sections of the Arm and Forearm, 127
- Plate 5 Motions of the Thumb, 162
- Plate 6 Cross Sections of the Thigh, 195
- Plate 7 Cross Sections of the Leg, 233
- Plate 8 Motor Distribution of Facial and Trigeminal Cranial Nerves, 299

Introduction, xv

- Brief History of Muscle Testing, xv
- How to Use This Book, xvii
- Names of the Muscles, xviii
- Anatomical Authorities, xviii
- The Convention of Arrows in the Text, xviii

Chapter 1

Principles of Manual Muscle Testing, 1

- The Grading System, 2
- Overview of Test Procedures, 2
- Criteria for Assigning a Muscle Test Grade, 6
- Screening Tests, 8
- Preparing for the Muscle Test, 8
- Summary, 8

Chapter 2

Testing the Muscles of the Neck, 13

- Capital Extension, 14
- Cervical Extension, 18
- Combined Neck Extension (Capital plus Cervical), 21
- Capital Flexion, 23
- Cervical Flexion, 26
- Combined Cervical Flexion (Capital plus Cervical), 30
- Combined Flexion to Isolate a Single Sternocleidomastoid, 32
- Cervical Rotation, 33

Chapter 3

Testing the Muscles of the Trunk, 35

- Trunk Extension, 36
- Lumbar Spine, 38
- Thoracic Spine, 39
- Lumbar and Thoracic Spine, 39
- Elevation of the Pelvis, 41
- Trunk Flexion, 44
- Trunk Rotation, 49
- Quiet Inspiration, 54
- Forced Expiration, 59

Chapter 4

Testing the Muscles of the Upper Extremity, 61

- Scapular Abduction and Upward Rotation (Serratus anterior), 63
- Scapular Elevation (Trapezius, upper fibers), 70
- Scapular Adduction (Trapezius, lower fibers), 73
- Scapular Adduction (Trapezius, middle fibers), 74
- Scapular Depression and Adduction (Trapezius, lower fibers), 77
- Scapular Adduction and Downward Rotation (Rhomboids), 80
- Shoulder Flexion (Anterior Deltoid and Coracobrachialis), 86
- Shoulder Extension (Latissimus dorsi, Teres major, Posterior Deltoid), 90
- Shoulder Scaption (Deltoid and Supraspinatus), 94
- Shoulder Abduction (Middle Deltoid and Supraspinatus), 95
- Shoulder Horizontal Abduction (Posterior Deltoid), 99
- Shoulder Horizontal Adduction (Pectoralis major), 102
- Shoulder External Rotation (Infraspinatus and Teres minor), 107
- Shoulder Internal Rotation (Subscapularis), 110
- Elbow Flexion (Biceps, Brachialis, and Brachioradialis), 114
- Elbow Extension (Triceps brachii), 118

- Forearm Supination (Supinator and Biceps brachii), 123
- Forearm Pronation (Pronator teres and Pronator quadratus), 128
- Wrist Flexion (Flexor carpi radialis and Flexor carpi ulnaris), 132
- Wrist Extension (Extensor carpi radialis longus, Extensor carpi radialis brevis, and Extensor carpi ulnaris), 137
- Finger MP Flexion (Lumbricales and Interossei), 141
- Finger PIP and DIP Flexion (Flexor digitorum superficialis and Flexor digitorum profundus), 145
 - PIP Tests, 146
 - DIP Tests, 148
- Finger MP Extension (Extensor digitorum, Extensor indicis, Extensor digiti minimi), 149
- Finger Abduction (Dorsal interossei), 152
- Finger Adduction (Palmar interossei), 155
- Thumb MP and IP Flexion (Flexor pollicis brevis and Flexor pollicis longus), 158
 - Thumb MP and IP Flexion Tests (Flexor pollicis brevis), 160
 - Thumb IP Flexion Tests (Flexor pollicis longus), 161
- Thumb MP and IP Extension (Extensor pollicis brevis and Extensor pollicis longus), 163
 - Thumb MP Extension Tests (Extensor pollicis brevis), 164
 - Thumb IP Extension Tests (Extensor pollicis longus), 166
- Thumb Abduction (Abductor pollicis longus and Abductor pollicis brevis), 168
 - Abductor pollicis longus Test, 169
 - Abductor pollicis brevis Test, 170
- Thumb Adduction (Adductor pollicis), 171
- Opposition (Thumb to Little Finger) (Opponens pollicis and Opponens digiti minimi), 174
- Hip Extension Test to Isolate Gluteus maximus, 192
- Hip Extension Test Modified for Hip Flexion Tightness, 194
- Supine Hip Extension Test, 196
- Hip Abduction (Gluteus medius and Gluteus minimus), 198
- Hip Abduction from Flexed Position (Tensor fasciae latae), 202
- Hip Adduction (Adductors magnus, brevis, and longus, Pectineus and Gracilis), 205
- Hip External Rotation (Obturator internus and externus, Gemellae superior and inferior, Piriformis, Quadratus femoris, Gluteus maximus (posterior)), 209
- Hip Internal Rotation (Glutei minimus and medius, Tensor fasciae latae), 213
- Knee Flexion (All hamstring muscles), 216
 - Hamstring Muscles in Aggregate, 218
 - Medial Hamstring Test (Semitendinosus and Semimembranosus), 218
 - Lateral Hamstring Test (Biceps femoris), 219
- Knee Extension (Quadriceps femoris), 222
- Ankle Plantar Flexion (Gastrocnemius and Soleus), 226
 - Gastrocnemius and Soleus Test, 228
 - Plantar Flexion, Soleus Only, 231
- Foot Dorsiflexion and Inversion (Tibialis anterior), 234
- Foot Inversion (Tibialis posterior), 237
- Foot Eversion with Plantar Flexion (Peroneus longus and Peroneus brevis), 240
- Hallux and Toe MP Flexion (Lumbricales and Flexor hallucis brevis), 243
 - Hallux MP Flexion (Flexor hallucis brevis), 244
 - Toe MP Flexion (Lumbricales), 245
- Hallux and Toe DIP and PIP Flexion (Flexor digitorum longus, Flexor digitorum brevis, Flexor hallucis longus), 246
- Hallux and Toe MP and IP Extension (Extensor digitorum longus and brevis, Extensor hallucis longus), 249

Chapter 5

Testing the Muscles of the Lower Extremity, 179

- Hip Flexion (Psoas major and Iliacus), 180
- Hip Flexion, Abduction, and External Rotation with Knee Flexion (Sartorius), 185
- Hip Extension (Gluteus maximus and Hamstrings), 188

Chapter 6

Testing of Infants, Toddlers, and Preschool Children, 253

Jack E. Turman, Jr., PT, PhD, and Leesha Perryman, PT, DPT

- Infants: 0-12 months, 254
- Prone, 256

Supine, 259
Sitting, 261
Standing, 264

Toddlers and Preschool Children:
1-5 years, 273

Chapter 7

Assessment of Muscles Innervated by Cranial Nerves, 289

Introduction to Testing and Grading, 290
Extraocular Muscles, 291

Muscles of the Face and Eyelids, 296

Nose Muscles, 304

Muscles of the Mouth and Face, 306

Muscles of Mastication, 312

Muscles of the Tongue, 318

Muscles of the Palate, 324

Muscles of the Pharynx, 329

Muscles of the Larynx, 332

Swallowing, 336

 Muscle Actions in Swallowing, 336

 Testing Swallowing, 337

Preliminary Procedures to Determine Clinically
the Safety of Ingestion of Food or
Liquids, 339

Chapter 8

Upright Motor Control, 343

 The Test for Upright Control, 344

 Flexion Control Test, 344

 Extension Control Test (in Parts 4, 5,
 and 6), 346

Chapter 9

Ready Reference Anatomy, 351

 Using this Ready Reference, 352

 Part 1. Alphabetical List of Muscles, 352

 Part 2. List of Muscles by Region, 356

 Part 3. Skeletal Muscles of the Human
 Body, 360

 Part 4. Motions and Their Participating
 Muscles (Motions of the Neck, Trunk, and
 Limbs), 428

 Part 5. Cranial and Peripheral Nerves and
 the Muscles They Innervate, 439

 Part 6. Myotomes: The Motor Nerve Roots
 and the Muscles They Innervate, 449

Index, 461