

INDEX

Note: Page numbers in italics refer to illustrations

A

Accessory navicular bone, 120–121
Accessory ossicle, 143
Acetabulum
 false profile, *64*
 hip pathoanatomy, *60, 61*
 pedis, 113, *113*
 version of, *64, 64*
Achondroplasia, 54, 238
Acid-fast bacteria, 186
Acrocephalopolysyndactyly, 243
Acrocephalosyndactyly, 241
Acrodysostosis, 241
Amniotic band syndrome, 13, *13*, 241
Amyoplasia. *See* Arthrogryposis
Angio-osteohypertrophy syndrome, 247
Ankle
 ball and socket, 129, *129*
 fracture. *See* Fracture
 sports-related injuries
 osteochondral lesion of talus,
 175, *175*
 sprain, 174, *174*
 tarsal tunnel syndrome, 129–130, *130*
 traumatic dislocation, 167
Antibiotics
 clinical assessment, *189*
 dosage, 190
 duration, 190, *190*
 indication, *190*
 prophylactic, 196
 selection, 190
 treatment, 190
Antley–Bixler syndrome, 241
Apert syndrome, 241
Aplasia, anomaly of the Dens axis,
 48, *48*
Arachnodactyly, *248*
Arthritis, juvenile idiopathic, 261, *261*
Arthrocentesis, 189
Arthrography, 139, *139*, 155
 hip, 65, *65*
Arthrogryposis, 13, *13*, 242
Atlantoaxial
 instability (AAI), 54, 55
 rotatory displacement (AARD),
 51, *51*
Atriadigital dysplasia, 247
Auriculo–osteodysplasia syndrome, 242

B

Back pain, 26
Baclofen, 224
Bankart lesion, *180*
Beals syndrome, 242
Beckwith–Wiedemann syndrome, 242
Bisphosphonates, 80
Blount disease
 cause, 97
 evaluation, 97–98
 infantile tibia vara, *97*
 Langenskiöld classification, *97*
 management, 98–99
Botulinum toxin, 223–224
Bowling. *See* Lower limb, deficiency
Brachial plexus birth injury, 18–19, *19*
Brachydactyly, 242
Brachymetatarsia, 118, *118*
Brachyolmia, 242
Brachyrhachia, 242
Bracket epiphysis, *115*
Broad thumb–Hallux syndrome, 257
Bruck syndrome, 242
Bunion, 116–117
Bunionette, 117
Butler procedure, 116, *116*

C

Caffey disease, 242
Calcaneovalgus, 123
Camptodactyly, 10–11
Camptomelic dysplasia, 243
Capitellum. *See* Capitulum
Capitulum, 155
Care of the child, 4–5
Carpal tunnel syndrome, 251
Carpenter syndrome, 243
Cartilage
 imaging, 69
 hip pathoanatomy, 60
Cast
 fracture, 140, *140*
 spica, 71, *71*
Caudal dysgenesis, 56
Cavus
 arthrodesis, 120
 classification, 118, *118*
 evaluation, 119
 management, 119
 muscle transfer/lengthening, 120
 osteotomy, 120
 physical examination, 119
Cellulitis, 20
Cerebral palsy, 14, *14*
 baclofen, 224
 botulinum toxin, 223–224
 causes of, 222, *222*
 classification
 geographic, 222–223, *222–223*
 gross motor function classification
 system, 223, *223*
 tonal, 222, *222*
 diagnosis, 223
 hip, 225–227, *226*
 lower limb, 227, *227*
 medical considerations, 223
 phenol, 224
 rhizotomy, 224
 scoliosis, 224
 spine, 224–225, *225*
Cervical intervertebral disc calcification,
 48, *48*
Charcot–Marie–Tooth disease, 233
Cheilectomy, 85
Chondrification, 24
Chondrodysplasia punctata, 243
Chondroectodermal dysplasia, 243
Chondrolysis, 82
Chondromyxoid fibroma, 209, *209*
Chromosomal defect, definition, 4
Chronic nonbacterial osteomyelitis (CNO),
 193, *193*
Chronic recurrent multifocal osteomyelitis
 (CRMO), 193, *193*
Classification
 Caterall, 78
 Herring, 78
 House, *13*
 Langenskiöld, *97*
 Salter–Harris. *See* Fracture
 Salter–Thompson, 78
 Zancolli, *14*
Cleidocranial dysplasia, 243
Clinodactyly, 11, *11*
Clubfoot, 123–124
 algorithm for treatment, 123, 125
 bracing, 125
 casting, 124–125

- Clubfoot (*Continued*)
 pathomechanics, 124
 surgical treatment, 125, 126
- Cognitive dissonance, 222, 222
- Compartment syndrome, 139, 139, 143
 exertional, 182, 182
- Computed tomography (CT), 68, 140, 155
 hip, 65, 65, 72, 72
 of hip infection, 189
 spondylolysis and spondylolisthesis, 44, 44
 torsion, operative correction, 94
 tumors, 202
- Congenital dislocation, of radial head, 16, 16
- Congenital kyphosis. *See* Kyphosis
- Congenital pseudarthrosis of clavicle, 18, 18
- Congenital radioulnar synostosis, 16, 16
- Congenital scoliosis. *See* Scoliosis
- Conradi-Hünermann syndrome, 243
- Constriction, upper limb, 13, 13
- Cornelia de Lange syndrome, 243
- Coxa vara
 deformity, 258
 evaluation, 86
 management, 87
 pathoanatomy, 86
 spondylo-epiphyseal dysplasia, 258
- Coxopodopatellar syndrome, 257
- Craniodiaphyseal dysplasia, 243
- Craniofacial hyperostosis, 249
- Cranioepiphyseal dysplasia, 243
- Craniosynostosis, 243
- C-reactive protein (CRP), 189, 189
- Cyst
 aneurysmal, 205–206, 205–206
 calcaneus, 205
 unicameral, 204–205, 204–205
- D**
- DDH. *See* Developmental dysplasia of the hip (DDH)
- de Bary syndrome, 243
- Deformation, definition, 3
- Delayed gadolinium enhancement MRI of cartilage (dGEMRIC), 69
- Delta phalanx, 11, 11
- Dens axis, 47, 47
 aplasia, 48, 48
 hypoplasia, 48, 48
 ligaments, 47, 47
- Denver developmental screening test, 92, 93
- Developmental dysplasia of the hip (DDH)
 18 months to 3 years, 73–74
 3 to 6 years, 74
 6 to 18 months, 70, 72
 6 years to maturity, 74–75
 Barlow sign, 66, 67
 bilateral, 67
 birth to 6 months, 70, 70
 cause, 66
 cutaneous creases, 66
 gait, 67
 hip abduction, 66
 hip click, 66
 imaging, 68–69
 incidence, 66
 inheritance, 66
 lower limb length discrepancy, 66, 67
 lumbar lordosis, 67, 67
 management, 70
 maturity, 76
 natural history, 69, 69
 Ortolani sign, 66, 67
 osteotomy, 73–76
 packaging signs, 67
 pathoanatomy, 66
 physical examination, 66
- Diaphyseal aclasis, 251
- Diastematomyelia, 52, 52
- Diastrophic dysplasia, 54, 54, 244
- Discitis, 27
 clinical features, 27
 management, 27
 prognosis, 27, 27
 Röntgenogrammes, 27
- Disjunction, 23, 24
- Disruption, definition, 3
- Distal metatarsal articular angle (DMAA), 116–117
- Down syndrome, 54, 55, 244
- Duplication, upper limb, 12, 12
- Dural ectasia, 55, 55
- Dyggve-Melchior-Clausen syndrome, 244
- Dysrrhaphism, 24
- E**
- Ear-patella-short stature syndrome, 249
- Ectrodactyly, 258
- Ehlers-Danlos syndromes, 244–245
- Ellis-van Creveld syndrome, 243
- Emanuel syndrome, 245
- Embryonal rhabdomyosarcoma, 213
- Enchondroma. *See* Tumor
- Enthesitis, 261
- Eosinophilic granuloma. *See* Tumor
- Epiphyseal dysplasia, multiple, 245
- Epiphyseal plate. *See* Physis
- Epiphysiodesis, timing, 105
- Erlenmeyer flask deformity, 243
- Erythrocyte sedimentation rate (ESR), 189, 189
- Escobar syndrome. *See* Pterygium syndrome
- Ewing sarcoma. *See* Tumor
- Exstrophy of bladder, 88
- F**
- Familial dysautonomia, 245
- Fanconi anemia, 245
- Felon, 20, 20
- Femoral-facial syndrome, 245
- Femur
 cyst, 204–205, 204–205
 deficiency, 107
 fracture. *See* Fracture
 osteomyelitis, 191
 osteotomy, 95
 shortening, closed, 105
 slipped capital epiphysis. *See* Slipped capital (upper) femoral epiphysis (SCFE, SUFE)
 torsion, version, 93, 94
- Fibrillin-1, 248
- Fibroblast growth factor receptor 3 (FGFR3), 241
- Fibrodysplasia ossificans progressiva, 245
- Fibroma, nonosteogenic. *See* Tumor
- Fibromatosis. *See* Tumor
- Fibrous dysplasia. *See* Tumor
- Fibula
 avulsion, 144
 deficiency, 107
 hemimelia, 107–108
 osteotomy, 95, 95
- Field defect, 3
- Fishtail deformity, 141
- Flatfoot, 121–123
 pathomechanics, 121
 surgical treatment, 122–123
- Flexor tenosynovitis, 20, 20
- Floating-Harbor syndrome, 257
- Focal fibrocartilaginous dysplasia. *See* Tumor
- Foot
 acetabulum pedis, 113, 113
 anatomy, 111–112
 compartment syndrome, 143
 evaluation, 113–114
 forefoot, 118
 hindfoot
 clubfoot, 123–124
 pathomechanics, 124–126
 tarsal coalition, 128
 vertical talus, 127
 infection, 132
 mechanics, 113
 metatarsal, 143, 143
 midfoot
 accessory navicular bone, 120–121
 calcaneovalgus, 123
 cavus, 118–120
 flatfoot, 121–123
 skewfoot, 123
 soft tissue injury, 143
 tarsus, 143
 tripod, 113, 113
 toe disorders, 115–117
 tumor, 131
- Foramen magnum, 54
- Fracture
 ankle, 144–145, 144
 articular, 138
 brawler's, 164
 buckle, 138
 bunk bed, 143
 cast, 140, 140
 cervical, 152, 152
 cervicotrochanteric, 152
 classifications, 138, 138
 clavicle, 153, 153
 compartment syndrome, 139, 139
 condylar, 165
 corner, 142, 142

- diaphysial
 clavicle, 153, 153
 femur, 150–151, 150, 151
 humerus, 154
 tibia, 146, 146
 distribution of, 136
 elbow
 anatomy, 155
 evaluation, 154–155
 imaging, 154–155
 lateral condyle, 159, 159
 medial condyle, 160
 medial epicondyle, 158–159, 158
 nursemaid's elbow, 155–156, 155
 olecranon, 161
 proximal radius, 160, 160
 radiographic alignment, 154, 154
 supracondylar humerus, 156–158
 evaluation
 history, 139
 imaging, 139–140
 physical examination, 139
 femur
 cervical, 152, 152
 cervicotrochanteric, 152
 complications, 152
 diaphysial, 150–151
 distal metaphysial, 149
 distal physial, 136, 149
 healing of, 150
 intertrochanteric, 152
 management of, 150
 ossification of, 150
 physial, 152
 proximal, 152
 foot
 calcaneus, occult, 143
 categories, 144
 metatarsal stress, 143, 143
 hallux, 143
 Jones, 143, 143
 physial, 144
 forearm, 161–163
 Monteggia, 161
 both bone, 162
 Galeazzi, 163
 radius distal, 162–163
 greenstick, 146
 hand
 Bennett, 164
 metacarpal, 164
 mallet, 165
 phalangeal, 164–165
 Seymour, 165
 humerus
 diaphysial, 154
 proximal, 153–154, 153
 management
 algorithm, 140
 cast, 140, 140
 fixation, 141
 metaphysial–diaphysial, 143
 nonaccidental trauma. *See* Nonaccidental trauma
 open, 143, 143
 calcaneus, 143
 types, 139, 139
 patella, 148, 148
 pelvis, 166, 166
 physial, 138
 periosteum, 138
 physiology
 bone, 138
 chondral model, 138, 138
 growth plate, 136–137
 ligaments, 138, 138
 periosteum, 138
 physis, 136–137
 plastic deformation, 138
 Salter–Harris classification, 144, 145, 149, 152
 type I, 144, 149, 149, 152, 164, 165, 166
 type II, 141, 144, 145, 149, 149, 164, 165, 166
 type III, 142, 144, 149, 149, 164
 type IV, 143, 143, 144, 144, 149, 149
 spina bifida, 230
 spine, 166
 sports-related injuries, 172
 stress, 146, 172
 tibia, 137
 diaphysial, 146, 146
 intercondylar eminence, 147, 147
 proximal metaphysial, 146, 146
 proximal physial, 147
 stress, 146
 toddler, 146, 146
 tubercle, 147, 147, 148
 torus, 149, 149
 transitional (of ankle)
 Tillaux, 145, 145
 triplane, 145, 145
 wrist, 163–165
 Freeman–Sheldon syndrome, 246
 Freiberg infraction, 130, 131
 Friedreich ataxia, 234, 246
G
 Gait, 92, 92, 178, 219–220, 219
 antalgic, 92, 92
 ataxic, 220
 circumduction, 92, 92, 219
 equinus, 92, 92, 220
 hip extensor weakness, 219
 scissoring, 219
 steppage, 219
 Trendelenburg, 92, 92, 219
 Galeazzi
 fracture, 163, 163
 sign, 67
 Gamekeeper's thumb, 164
 Gardner syndrome, 207
 Gastrulation, 23
 Gaucher disease, 246
 Gene
 developmental, 3
 mutation, classification, 4
 nerve and muscle function, 3
 protein processing, 3
 regulatory, 3
 structural gene, 3
 Genu. *See* Knee
 Glycosaminoglycan, 250
 Goldenhar syndrome, 246
 Gonadal dysgenesis, 243
 Gram
 negative bacteria, 186
 positive bacteria, 186
 stain technique, 186
 Growth
 arrest line, 137, 137
 bone, 1–2
 joint, 1
 physis, 2, 2
 plate. *See* Physis
 rate of, 3, 3
 stages of, 1
 Guillain–Barré syndrome, 246
H
 Hallux
 fracture, 143
 rigidus, 117
 varus, 117
 Hæmangioma, 212, 212
 Hand
 fracture. *See* Fracture
 infection
 cellulitis, 20
 deep space infection, 20
 felon, 20, 20
 flexor tenosynovitis, 20, 20
 herpetic whitlow, 20
 paronychia, 20, 20
 Hand–foot–genital syndrome, 246
 Heart–hand syndrome, 247
 Hæmophilia, 246
 Hereditary ataxia, 234
 Herpetic whitlow. *See* Hand
 Hip
 arthrodesis, 75, 75
 cerebral palsy, 225–227, 226
 coxa vara, 86–87
 development, 59–60
 developmental dysplasia, 66–76
 distinguishing features, 61–62
 dysplasia, spectrum, 66
 evaluation
 history, 62
 imaging, 64–65
 physical examination, 62–63
 exstrophy of bladder, 88
 femoroacetabular impingement, 89
 labrum, 69
 Legg–Calvé–Perthes disease, 77–80
 osteonecrosis, 72, 72
 pathoanatomy, 60–61
 protrusio acetabuli, 88
 reduction, closed vs. open, 70–72
 slipped capital femoral epiphysis, 81–86
 snapping hip, 87
 spina bifida, 230
 vascularity, 60

Holt–Oram syndrome, 247
 Homocystinuria, 247
 Hurler syndrome, 251

I

Iliotibial tract, 220
 Immobilization, spica cast, 71, 71
 Impingement
 femoro-acetabular, 86, 89
 hip imaging, 69
 shoulder, 181
 Implantography, 83
 Infantile cortical hyperostosis, 242
 Infection
 bone. *See* Osteomyelitis
 deep space, 20
 evaluation
 history, 188
 imaging, 188–189
 laboratory studies, 189
 physical examination, 188
 foot and ankle, 132
 glycocalyx, 185
 hand. *See* Hand infection
 management
 antibiotics, 189, 190, 190
 complications, 192–193
 osteomyelitis, 191–192, 192
 pyarthritides, 190–191, 191
 necrotizing fasciitis, 194–195, 194
 organism *versus* host, 187
 organisms, 186–187
 osteomyelitis, 185
 paronychia, 20, 20, 132, 132
 pathophysiology, 185–186
 pelvis, 193–194, 193
 portals of entry, 185
 Pseudomonas, 132, 132
 pyarthritides, 185, 189
 pyomyositis, 194
 salmonella osteomyelitis, 187
 spina bifida, 229
 surgical site, 196, 196
 transphyseal extension, 186
 tuberculosis, 195, 195
 vascular anatomy, 186
 Innominate osteotomy. *See* Developmental dysplasia of the hip (DDH)
 Intoeing, 94, 94
 Intramembranous ossification, 2
 Iridocyclitis, 261, 261
 Ischiopatellar dysplasia, 257

J

Juvenile idiopathic arthritis, 26, 261, 261

K

Kienböck disease, 15, 15
 Kirner deformity, 11, 11
 Klippel–Feil syndrome, 48, 48
 Klippel–Trénaunay–Weber syndrome, 247
 Knee
 angle, 91
 anterior pain, 99

congenital dislocation, 100, 100
 dislocation, 100–101
 extension, 220
 flexion, 220
 fracture
 traumatic dislocation, 167
 genu recurvatum, 220
 genu valgum and varum
 evaluation, 95–96
 management, 96
 screw physiodesis, 96
 osteocondroses, 100
 popliteal cyst, 101–102
 sports-related injuries
 discoid meniscus, 176, 176
 ligament tear, 179, 179
 meniscus tear, 176, 176
 osteocondritis dissecans, 178, 178
 patellar instability, 177–178, 177–178
 Kniest dysplasia, 247
 Köhler disease, 130–131
 Kyphosis, 195, 229
 achondroplasia, 54
 congenital
 evaluation, 40, 40
 management, 40
 posterior fusion, 40
 neurofibromatosis, 55–56
 Scheuermann, 41
 spina bifida, 229

L

Langerhans cell histiocytosis, 210, 211
 Larsen syndrome, 247
 Latex allergy, 229, 229
 Leg aches, 93, 93
 Legg–Calvé–Perthes disease (LCP), 245
 distinguish from multiple epiphyseal dysplasia, 245
 evaluation, 77–78
 management, 79–80
 natural history, 78
 pathoanatomy, 77
 Léri–Weill dyschondrosteosis, 247
 Lesch–Nyhan syndrome, 247
 Leukæmia, acute lymphoblastic, 215
 Ligaments
 ankle, injuries of, 174
 fracture, 138, 138
 knee, injuries of, 179, 179
 sports-related injuries, 172
 Lipomyelomeningocele, 228
 Lisch nodules, neurofibromatosis, 252
 Little disease, 222
 Little leaguer's
 elbow, lateral, 182
 elbow, medial, 181, 181
 shoulder, 180–181, 180
 LLLD. *See* Lower limb length discrepancy (LLLD)
L'Orthopedie (1741), 1, 1
 Lower limb
 anatomy, 91
 anterior knee pain, 99

bipartite patella, 102
 Blount disease, 97–99
 causes by age, 91
 cerebral palsy, 227, 227
 deficiency
 classification, 106
 fibular hemimelia, 107–108
 proximal femoral focal, 107
 tibial bowing, 108–109, 109
 tibial hemimelia, 108
 genu valgum and genu varum. *See* Knee
 leg aches, 93, 93
 limp
 cause, 92
 Denver developmental screening test, 92, 93
 evaluation, 92
 gait, 92, 92
 management, 92–93
 painless, 92
 length discrepancy (LLLD)
 algorithm, 103
 causes, 103
 clinical assessment, 103
 evaluation, 103
 management, 104–106
 natural history, 103
 popliteal cyst. *See* Knee
 spina bifida, 230, 230
 torsion
 development, 94
 evaluation, 94
 femoral osteotomy, 95
 femoral version, 93, 94
 fibula osteotomy, 95, 95
 foot, 94
 foot progression angle, 93, 94
 nomenclature, 93–94
 tibial osteotomy, 95, 95
 tibial rotation angle, 94, 94
 Lyme disease, 187

M

Macroductyly
 foot, 117, 117
 hand, 12
 Madelung deformity, 15, 15, 247
 Mafucci syndrome, 209
 Magnetic resonance imaging (MRI), 140, 155
 Blount disease, 98
 developmental dysplasia of the hip, 68
 hip, 65, 65
 hip infection, 189, 189
 knee, 179
 slipped capital femoral epiphysis, 82
 spondylolysis and spondylolisthesis, 44, 44
 tumors, 202
 Malformation
 definition, 3
 types, 3
 Marble bone disease, 254–255
 Marfan syndrome, 55, 55, 248
 Marshall–Smith syndrome, 249
 McCune–Albright syndrome, 206, 249, 252

- Meier–Gorlin syndrome, 249
Melnick–Needles syndrome. *See* Otopalatodigital syndromes
Melorheostosis, 249
Meningocele, 228
Meniscus
 anatomy, 172, 176
 discoid, 176, 176
 tear, 176, 176
Merchant view, 177
Mesomelic dysplasia, 249
Metachondromatosis, 249
Metaphysial chondrodysplasia, 249–250
Metaphysial dysplasia. *See* Pyle disease
Metastasis, 215
Metatarsus adductus, 118, 118
Metatropic dysplasia, 250
Möbius syndrome, 250
Monteggia fracture, 161, 161
Morquio syndrome, 251
Mucopolysaccharidosis, 250–251, 250
Multiple
 enchondromatosis, 251
 exostoses, 251
 osteochondromata, 251
 synostosis syndrome, 251
Muscular dystrophy
 Becker, 231
 Duchenne
 deflazacort, 231
 evaluation, 231
 foot and ankle, 232
 Gower sign, 231, 231
 imaging, 231
 laboratory analysis, 231
 lumbar hyperlordosis, 231
 spine, 231–232
 Emery–Dreifuss, 232
 facioscapulohumeral, 232, 232
 myotonic, 232
Mycoplasma, 186
Myelomeningocele, 228, 228
Myositis ossificans, 245
Myotome, 24
- N**
Nail–patella syndrome, 252
Necrotizing fasciitis. *See* Infection
Neurapraxia, 157
Neurectomy, 226
Neurofibromatosis, 55–56, 252
 kyphosis, 55–56
 pseudarthrosis, 56
Neuromuscular disorders
 central nervous injury, 217
 cerebral palsy. *See* Cerebral palsy
 Charcot–Marie–Tooth disease, 233
 evaluation
 cognitive function, 219
 deformity, 220–221, 220
 gait, 219–220, 219
 history, 217
 imaging, 221
 laboratory analysis, 221, 221
 motor function, 219
 reflexes, 221, 221
 sensory function, 219
 Friedreich ataxia, 234
 level of disease, 218
 management, 222
 muscular dystrophy. *See* Muscular dystrophy
 poliomyelitis, 234
 prevalence of, 217, 218
 scoliosis, 225
 spina bifida. *See* Spina bifida
 spinal muscular atrophy, 234, 234
Neurulation, 23
Nonaccidental trauma
 corner fracture, 142, 142
 evaluation, 142
 imaging, 142
 management, 142
 skin stigma, 142, 142
- O**
Oculoauriculovertebral syndrome, 246
Oculodentodigital dysplasia, 253
Ollier disease, 105
Orthotics, 104
Os
 odontoideum, 48, 48
 trigoneum, 130, 130
Osgood–Schlatter condition, 99, 100
Ossification, 24
 endochondral, 2, 2
 intramembranous, 2
Osteochondritis dissecans
 knee, 178, 178
 sports-related injuries, 172, 173, 175, 178
 talus, 175
Osteoclast dysfunction, 254
Osteogenesis imperfecta, 54, 54, 253–254, 253–254
Osteomyelitis, 185, 188
 chronic recurrent multifocal, 193, 193
 classification, 191
 femur, 191
 geographic distribution, 192
 imaging, 192
 pelvis, 191
 subacute, 192, 192
 treatment, 192, 192
Osteopetrosis, 254–255
Otopalatodigital syndromes, 255
Overuse injuries, 171
- P**
Pædiatric orthopædic surgery, 4
Paronychia. *See* Infection
Patella
 bipartite, 102
 dislocation, 101
 fracture
 marginal, 148, 148
 transverse, 148, 148
 instability, knee injury, 177–178, 177–178
Pavlik harness, 70, 72
Pelvis. *See also* Hip; Spine
 aneurysmal bone cyst, 206
 fracture, 166, 166
 incidence (PI), 43, 43
 infections, 193–194, 193
 obliquity, 220, 221, 225
 tilt (PT), 43, 43
Positron emission tomography (PET)
 hip infection, 189
 tumors, 202, 214
Phocomelia, 10, 10
Physial separation, distal humerus, 156, 156
Physis
 blind spot, SCFE, 83
 bridge, 141–142, 141–142
 physiodesis
 lower limb length discrepancy, 104
 percutaneous, 105
 screw, 96
 reduction and stabilization, 84
 sports-related injuries, 172
 stabilization, SCFE, 83
Plagiocephaly, 50, 50
Plica synovialis, 183, 183
Poland syndrome, 13, 13, 255
Poliomyelitis, 234
Polydactyly, 12, 12, 115
Polymerase chain reaction, 189
Polyostotic fibrous dysplasia, 206
Popliteal cyst. *See* Knee
Pott disease, 195
Prader–Willi syndrome, 239, 255
Propionibacterium acnes, 187
Proteus syndrome, 256
Protrusio acetabuli, 64, 88
Proximal femoral focal deficiency (PFFD), 107
Prune Belly syndrome, 256
Pseudarthrosis, 229, 252, 252
 neurofibromatosis, 56
 spine, 37
 tibia, 109
Pseudoachondroplasia, 256
Pseudoparalysis, 62, 139, 188
Pseudosubluxation, 47, 47
Pterygium syndrome, 256
Puncture wound, 132, 132
Pyarthrititis, 185, 189, 190–191, 191
Pycnodysostosis, 256
Pyle disease, 256
Pyomyositis, 194
- Q**
Q-angle, 91
Quad test, 244
- R**
Reflex neurovascular dystrophy, 183, 183
Reflexes, 221
Remodeling, 136, 137
Rhabdomyosarcoma, alveolar, 213
Rhizotomy, 224
Rickets, 257
Riley–Day syndrome, 245. *See also* Familial dysautonomia

- Röntgenography, 139, 139, 142, 154
 bone cyst, 204
 DDH, 68
 discitis, 27
 foot, 114, 114
 hip infection, 188, 188
 knee, 179
 lower limb length discrepancy, 104
 syndromes, 239
 tumors, 200, 201
 Rubinstein–Taybi syndrome, 257
- S**
- Sacral
 agenesis, 56, 56
 dimple, 56, 56
 Salter–Harris fracture. *See* Fracture
 Sarcoma. *See* Tumor
 SCFE. *See* Slipped capital (upper) femoral epiphysis (SCFE, SUFE)
 Scheuermann kyphosis. *See* Spine
 Schisis, 24
 Schmorl nodes. *See* Spine
 Scintigraphy, 139, 142
 hip, 65, 65
 of hip infection, 188, 188
 SCFE, 82
 spondylolysis and spondylolisthesis, 43, 43
 tumors, 202
 SCIWORA. *See* Spine
 Sclerotome, 24
 Scoliosis, 28, 28, 229, 252
 congenital
 evaluation, 38, 38
 management, 38
 idiopathic
 classification, 28, 31–32
 complications, 36–37
 evaluation, 28–30
 management, 32–35
 natural history, 32, 32
 neural disease, 224–225, 225, 229, 229
 muscular disease, 231–232, 234, 234
 Seckel syndrome, 257
 Sequence, definition, 3
 Sever condition, 130
 Shoulder
 brachial plexus birth injury, 18–19, 19, 19
 congenital pseudarthrosis, clavicle, 18, 18
 sports-related injuries
 impingement, 181
 instability, 180
 little leaguer’s, 180–181, 180
 Sprengel anomaly, 17, 17
 Shprintzen syndrome, 260
 Sickle cell disease, 187
 Sign
 Allis, 67
 Barlow, 66, 67
 Galeazzi, 67
 Gower, 231, 231
 packaging, 67
 Ortolani, 66, 67
 Scotty dog, 42
 Silver–Russell syndrome, 257
 Sinding–Larsen–Johansson condition, 100
 Single photon emission computed tomography (SPECT)
 spine, 25, 25, 53
 spondylolysis, 43, 43
 Skewfoot, 123
 Skier’s thumb, 164
 Slipped capital femoral (upper) epiphysis (SCFE, SUFE)
 cheilectomy, 85
 deformity, 81
 evaluation, 81–82
 femoroacetabular impingement, 86
 flexion intertrochanteric osteotomy, 85
 vs. fracture, 81
 management, 83–86
 natural history, 82
 open reduction and internal fixation, 84
 pathoanatomy, 81
 prophylactic stabilization of contralateral, 86
 SCFE treatment complications, 86
 temporal classification, 81
 treatment complications, 86
 Slipped vertebral epiphysis, 166
 Small patella syndrome, 257
 Spina bifida, 24
 aperta, 24
 causes of, 228
 clinical presentation, 228–229
 diagnosis, 228
 foot deformity, 230
 hip, 230
 history, 228
 infection, 229
 kyphectomy, 229
 lower limb, 230, 230
 pathophysiology, 228, 228
 Spine
 achondroplasia, 54
 aneurysmal bone cyst, 205
 associated neural disorders
 chiari malformation, 52
 diastematomyelia, 52, 52
 syrinx, 52
 tethered cord, 52
 back pain
 CANDIF, 26
 causes, 26
 evaluation, 26
 juvenile idiopathic arthritis, 26
 lordosis, 26, 26
 management, 26
 prevalence, 26
 caudal dysgenesis, 56
 cerebral palsy. *See* Cerebral palsy
 cervical
 anomaly of dens axis, 48, 48
 atlantoaxial instability, 47, 47
 cervical intervertebral disc calcification, 48, 48
 Klippel–Feil syndrome, 48, 48
 pseudosubluxation, 47, 47
 relational lines, 47, 47
 deformity, 221, 258
 diastrophic dysplasia, 54
 discitis, 27
 clinical features, 27
 management, 27
 prognosis, 27, 27
 embryology and development, 23–24
 evaluation
 history and physical examination, 25, 25
 imaging, 25, 25
 kyphosis. *See* Kyphosis
 lordosis, 219, 231
 lumbar, 54
 Marfan syndrome, 55, 55
 metastasis, 215
 muscular disease, 231–232, 234, 234
 neural lesion
 Chiari malformation, 52
 diastematomyelia, 52, 52
 syrinx, 52
 tethered cord, 52, 229
 neurofibromatosis, 55–56
 osteogenesis imperfect, 54
 sacral dimple, 56
 Schmorl node, 41, 41
 SCIWORA, 166
 scoliosis. *See* Scoliosis
 slipped vertebral epiphysis, 166, 166
 spina bifida, 229, 229
 spinal cord injury, 56
 spondylolysis and spondylolisthesis. *See* Spondylolysis and spondylolisthesis
 thoracic insufficiency syndrome, 39
 torticollis. *See* Torticollis
 tuberculosis, 195
 tumor. *See* Tumor
 Split hand/split foot malformation, 258
 Spondyloepimetaphysial dysplasia, 258
 Spondyloepiphysial dysplasia, 258
 Spondylolysis and spondylolisthesis
 brace for, 44
 evaluation, 42–44
 Ferguson view, 42
 L5-S1 circumferential fusion, 46
 L4-S1 posterior fusion, 46
 management, 44–46
 nonhealing, 44
 pathogenesis, 42
 pelvic incidence (PI), 43, 43
 pelvic tilt (PT), 43, 43
 repair of, 105
 Scotty dog, 42
 surgical approach, 105
 Spondylometaphysial dysplasia, 259
 Sports
 acute injury, 171, 172
 age, 169
 ankle
 osteochondral lesion of talus, 175, 175
 sprain, 174, 174
 childhood obesity, 170, 170
 compartment syndrome, exertional, 182, 182
 concussion, 173, 173

- differential maturation, 169, 170
 disabled child, 171
 Down syndrome, 171
 elbow
 lateral little leaguer's, 182
 medial little leaguer's, 181, 181
 epidemiology, 171, 171
 gender, 170
 genetics, 170
 injury prevention, 171, 171
 knee
 discoid meniscus, 176, 176
 ligament tear, 179, 179
 meniscus tear, 176, 176
 osteochondritis dissecans, 178, 178
 patellar instability, 177–178, 177–178
 overuse injuries, 171
 physis, 169
 plica synovialis, 183, 183
 reflex neurovascular dystrophy, 183, 183
 shoulder
 atraumatic instability, 180
 impingement, 181
 little leaguer's, 180–181, 180
 traumatic instability, 180
 strength training, 173
 thermoregulation, 170
 types of, 172
 wheelchair injuries, 171
 Sprengel anomaly, 17, 17
 Stickler syndrome, 259
 Streeter dysplasia. *See* Amniotic band syndrome
 Symbrachydactyly, 8–9, 9
 Symphalangism, 10
 Syndactyly, 10, 10, 115
 classification, 10
 treatment, 10
 Syndromes. *See also specific syndromes*
 algorithm, 240, 240
 classification, 238–239
 definition, 3
 evaluation
 history, 239
 imaging, 239–240
 laboratory analysis, 240
 pathognomonic features, 239, 240
 stature, 239
 facies, 238, 238
 geographical distribution, 239
 micromelia, 238, 238
 short stature, 238, 238
- T**
 Tarsal coalition, 128
 Tarsal tunnel syndrome, 129–130, 130
 Tethered spinal cord. *See* Spine
 Thanatophoric dysplasia, 259
 Thoracic insufficiency syndrome, 39, 39
 Thoraco(s)tomy and expansion, 39
 Thrombocytopenia-absent radius (TAR) syndrome, 259
 Thumb
 hypo-/aplasia, 12, 12
 polydactyly, 12, 12
 trigger, 11, 11
 Tibia
 bowing, 108–109, 109
 fracture. *See* Fracture
 osteotomy, 95, 95
 pseudarthrosis, 109
 Tibia vara. *See* Blount disease
 Toe disorders
 bracket epiphysis, 115
 bunion, 116–117
 bunionette, 117
 claw, 115, 116
 curly, 115
 hallux rigidus, 117
 hallux varus, 117
 hammer, 116
 injury, 143
 macroductyly, 117, 117
 mallet, 116
 overlapping toe, 116, 116
 polydactyly, 115
 syndactyly, 115
 walking, 129
 Torsion
 development, 94
 evaluation, 94
 femur
 osteotomy, 95
 version, 93, 94
 foot, 93, 94
 nomenclature, 93–94
 tibia and fibula
 osteotomy, 95, 95
 rotation angle, 94, 94
 Torticollis
 atlantoaxial rotatory displacement, 51, 51
 gastrointestinal, 49
 muscular, 50, 50
 neural, 49
 ocular, 49
 osseous, 49
 paroxysmal type, 49
 tumor, 49, 49
 types of, 49, 49
 Transforming growth factor- β (TGF- β), 248
 Trapezoidocephaly, 241
 Traumatic brain injury, 173
 Trevor disease, 244
 Trichorhinophalangeal dysplasia, 259
 Triplane fracture, 145, 145
 Tripod, 113, 113
 Trisomy, 244, 248
 Trochlea
 dysplasia, 177
 humeri, 155
 Tuberculosis. *See* Infection
 Tumor
 benign, 211–212
 biopsy, 203, 203
 bone
 eosinophilic granuloma, 53, 53, 211, 211
 giant cell, 211, 211
 leukæmia, 215
 osteoid osteoma vs. osteoblastoma, 210, 210
 osteosarcoma, 214, 214
 malignant, 214–215, 214–215
 bone cyst
 aneurysmal, 205–206, 205–206
 unicameral, 204–205, 204–205
 cartilage
 chondroblastoma, 209, 209
 chondromyxoid fibroma, 209, 209
 enchondroma, 209, 209
 osteochondroma, 208, 208
 Codman, 209
 evaluation
 age distribution of, 200
 biopsy, 203, 203
 differential diagnosis, 203–204, 203
 history, 199
 imaging, 200, 201, 202
 laboratory analysis, 202
 location, 201, 202
 physical examination, 200
 presentation of pain, 199, 200
 staging, 202–203, 203
 Ewing sarcoma, 214–215, 215
 fibrous
 desmoid, 207
 fibrous dysplasia, 206–207, 206
 focal fibrocartilaginous dysplasia, 208, 208
 nonosteogenic fibroma, 206, 206
 malignant, 214–215, 214–215
 metastasis, 215, 215
 soft tissue
 hæmangioma, 212, 212
 pigmented villonodular synovitis, 212
 rhabdomyosarcoma, 213, 213
 synovial sarcoma, 213, 213
 spine, 53–56, 53, 54, 55
 staging, 202–203, 203
 Turner syndrome, 259
- U**
 Ultrasonography, 140, 155
 hip, 65, 65
 developmental dysplasia, 68
 infection, 188, 188
 lower limb length discrepancy, 104
 SCFE, 82
 syndromes, 240
 tumors, 202
 Upper limb
 amniotic band syndrome, 13, 13
 constriction, 13, 13
 deficiency
 phocomelia, 10, 10
 postaxial, 10
 preaxial, 9–10, 10
 symbrachydactyly, 8–9, 9
 developmental anomaly, 7, 8
 duplication
 polydactyly, 12, 12

Upper limb (*Continued*)

evaluation

- observation, 8, 9
- physical examination, 8

failure of differentiation

- camptodactyly, 10–11
- clinodactyly, 11, 11
- delta phalanx, 11, 11
- Kirner deformity, 11, 11
- sympalangism, 10
- syndactyly, 10, 10
- trigger thumb, 11, 11

forearm

- congenital dislocation of radial head, 16, 16
- congenital radio-ulnar synostosis, 16, 16

hand infection

- cellulitis, 20
- deep space, 20

felon, 20, 20

- flexor tenosynovitis, 20, 20
- herpetic whitlow, 20
- paronychia, 20, 20

macroductyly, 12

neuromuscular disease

- arthrogryposis, 13, 13
- cerebral palsy, 14, 14
- House classification, 13, 13
- Zancolli classification, 14

overgrowth, 12

- macroductyly, 8, 12

tendon laceration, 165, 165

undergrowth

- Poland syndrome, 13, 13
- thumb hypo-/a-plasia, 12–13, 12

wrist

- Kienböck disease, 15, 15
- Madelung deformity, 15, 15

V

VACTERL, 38, 260

van Nes rotationplasty, 107

Velocardiofacial syndrome, 260

Vertebra plana, 211

Vertebra

- development, 24
- resection, 38, 40

Vertical talus, 127

von Willebrand disease, 260

W

Waardenburg syndrome, 260

Whistling face syndrome. *See* Freeman–Sheldon syndrome

Whistling face–windmill vane hand syndrome, 246

Winograd operation, 132, 132

Wound, puncture, 132, 132