



Orthopedic Assessment

Musculoskeletal examination, assessment, special tests & diagnosis



ARTHROKINEMATICS & JOINT MOBILITY

HIP	Femur on acetabulum	Anterior glide: Extension, internal rotation Posterior glide: Flexion, internal rotation Inferior glide: Abduction & flexion
KNEE	Tibia on femur	Anterior glide: Extension Posterior glide: Flexion External rotation: Extension Internal rotation: Flexion
	Patella on femur	Inferior glide: Flexion Superior glide: Extension Medial glide: Early knee flexion Lateral glide: Terminal knee extension
ANKLE	Talus on tibia	Posterior glide: Dorsiflexion Anterior glide: Plantarflexion
	Distal fibula on tibia	Superior & posterior glide: Dorsiflexion Inferior & anterior glide: Plantarflexion
	Proximal fibula on tibia	Superior & anterior glide: Dorsiflexion Inferior & posterior glide: Plantarflexion
	Proximal phalanx on metatarsal	Anterior/dorsal glide: Toe extension Posterior/plantar glide: Toe flexion
FOOT	Middle phalanx on proximal phalanx	Anterior/dorsal glide: Toe extension Posterior/plantar glide: Toe flexion
	Distal phalanx on middle phalanx	Anterior/dorsal glide: Toe extension Posterior/plantar glide: Toe flexion
	Posterior calcaneus on tibia	Lateral glide: Inversion & supination Medial glide: Eversion & pronation
SHOULDER	Humerus on glenoid	Anterior glide: External rotation, extension, horizontal abduction Posterior glide: Flexion, internal rotation, horizontal adduction Inferior glide: Abduction, flexion, supination
	Medial clavicle on manubrium	Posterior glide: Scapular retraction & humerus horizontal abduction Anterior glide: Scapular protraction & humerus horizontal adduction Inferior glide: Scapular elevation & upward rotation, humerus adduction Superior glide: Scapular depression & downward rotation
ELBOW	Proximal radius on humerus	Anterior glide: Flexion Posterior glide: Extension
	Proximal radius on ulna	Anterior glide: Supination Posterior glide: Pronation
WRIST	Proximal carpus on distal radius	Anterior glide: Extension Posterior glide: Flexion
	Distal ulna on radius	Anterior glide: Supination Posterior glide: Pronation
HAND	Base for metacarpal on trapezium	Anterior/palmar glide: Thumb adduction Posterior/dorsal glide: Thumb abduction Lateral/medial glide: Thumb extension Medioclinal glide: Thumb flexion
	Proximal phalanx on metacarpal head	Anterior/palmar glide: Finger flexion
	Middle phalanx on proximal phalanx	Posterior/dorsal glide: Finger extension
	Distal phalanx on middle phalanx	Anterior/palmar glide: Finger flexion Posterior/dorsal glide: Finger extension

DECISION RULES FOR ORDERING RADIOGRAPHS

DECISION RULE: Criteria	Interpretation
PITTSBURGH KNEE RULES: Blunt trauma or fall plus either of the following: 1. Age > 50 or < 12 2. Inability to walk 4 weight-bearing steps (2 per leg) - Requires radiograph	
OTTAWA KNEE RULES: Acute knee injury plus one of the following: 1. Age 55 or older 2. Isolated bony tenderness at patella 3. Isolated bony tenderness at the fibular head 4. Inability to flex knee to 90° 5. Inability to walk 4 weight-bearing steps (2 per leg) - Requires radiograph	
OTTAWA ANKLE RULES: Trauma & pain distal malleolus or proximal tibia or distal tibia plus either of the following: 1. Inability to walk 4 weight-bearing steps (2 per leg) 2. Tenderness at malleolar zone - Requires radiograph	
BUFFALO ANKLE RULES: Same as Ottawa rules with exception of additional zone for pain & tenderness (distal tibia, medial malleolus/lateral region) - Requires radiograph	
AMERICAN COLLEGE OF RADIOLOGY APPROPRIATENESS CRITERIA: ANKLE OR FOOT: Chronic ankle or foot pain - Requires radiograph	
OTTAWA FOOT RULES: Trauma & pain midfoot zone (5th metatarsal base or navicular) plus either of the following: 1. Inability to walk 4 weight-bearing steps (2 per leg) 2. Tenderness at midfoot zone - Requires radiograph	
CANADIAN C-SPINE RULES: Acute cervical spine/neck injury plus either a high-risk factor or inability to rotate head 45° bilaterally. Cervical rotation should not be attempted & radiograph should be ordered if midline tenderness or swelling for sit up independent. High-risk factors include age > 65, distracting mechanism of injury, venous/paresthesias - Requires radiograph	
NECKS RULES: Following trauma to cervical spine or head & radiograph is indicated unless the patient meets the following criteria: 1. No midline cervical spine tenderness 2. No focal neurological deficits 3. Normal alertness 4. No intoxication 5. No painful distracting injury - Requires radiograph if patient does not satisfy all criteria	
AMSTERDAM DISTAL RADIUS RULES: Male gender, advancing age, wrist swelling, visible deformation, tenderness at distal radius, pain with wrist flexion, supination & pain with radioulnar bolthoment - Need for radiograph determined by software app	
AMSTERDAM SCAPHOID RULES: Male gender, smudged swelling, thumb tenderness, painful ulnar deviation, painful long wrist thumb compression - Need for radiograph determined by software app	
OSTEOPOIC VERTEBRAL FRACTURE: Age > 50, no leg pain, BMI < 25, no trauma, no fall - 2/5 increase likelihood of a fracture & need for imaging	
AMERICAN COLLEGE OF RADIOLOGY APPROPRIATENESS CRITERIA: HAND OR WRIST: Acute blunt or penetrating trauma to the hand or wrist - Requires radiograph	
AMERICAN COLLEGE OF RADIOLOGY APPROPRIATENESS CRITERIA: HIP OR PELVIS: Acute hip pain following a fall or motor trauma, chronic hip or pelvic pain - Requires radiograph	
AMERICAN COLLEGE OF RADIOLOGY APPROPRIATENESS CRITERIA: LOW BACK PAIN: Patients with uncomplicated low back pain who have had 6 weeks of treatment with no improvement or who present with red flags raising suspicion for cauda equina syndrome, fracture, infection, or malignancy - Requires radiograph. Higher ticket imaging indicated for red flags	
ELBOW TRAUMA STUDY: Acute loss of elbow extension following trauma - Requires radiograph	

PATIENT SELF-REPORT INSTRUMENTS FOR THE MUSCULOSKELETAL SYSTEM

INSTRUMENT: Region of Interest	Details: Purpose
OSWESTRY DISABILITY INDEX: Lower back	- 35-item self-report questionnaire: Perceived disability resulting from low back pain
NECK DISABILITY INDEX: Neck	- 10-item self-report questionnaire: Perceived disability resulting from neck pain
BRISQAH & WOMEN'S HOSPITAL HAND SYMPTOM SEVERITY SCALE: Wrist/hand	- 71-item self-report questionnaire: Measures domains associated with carpal tunnel syndrome: pain, paresthesias, numbness, weakness, nocturnal symptoms & general functional status
DISABILITIES OF THE ARM, SHOULDER & HAND (DASH): Upper extremity	- 30-item self-report questionnaire with optional work & sports performing only module: Measures physical function in people with musculoskeletal disorders of the upper limb
QUICK-DASH: Upper extremity	- Modified 10-item version of DASH: Measures physical function in people with musculoskeletal disorders of the upper limb
SHOULDER PAIN & DISABILITY INDEX (SPADI): Shoulder	- 10-item self-report questionnaire: Measures disability & pain in people with musculoskeletal disorders of the shoulder
LOWER EXTREMITY FUNCTIONAL SCALE: Lower extremity	- 20-item self-report questionnaire: Identifies functional limitations attributed to the lower extremities
WESTERN ONTARIO & MCMASTER UNIVERSITIES ARTHRITIS INDEX (WOA-MI): Hip or knee	- 24-item self-report questionnaire: Measures the influence of hip or knee osteoarthritis on pain, stiffness & physical function
PATIENT-SPECIFIC FUNCTIONAL SCALE: Involved region(s) of interest	- 3-item self-report questionnaire with option for more of less items: Identifies & quantifies activities that patient is unable to do or considers difficult as a result of condition
GLOBAL RATING OF CHANGE: Involved region(s) of interest	- 5-item self-report questionnaire: Identifies patient-perceived change in response to treatment
FEAR AVOIDANCE BELIEFS SCALE: Spine	- 30-item self-report questionnaire: Only if items are scored: Identifies the presence & influence of fear avoidance beliefs on both work & activity
CHRONIC PAIN GRADE SCALE: Involved region(s) of interest	- 3-item self-report questionnaire: Characterizes pain intensity & pain-related disability to classify chronic pain severity

KEY MOTOR NEURONS: SIGNS & SYMPTOMS

UPPER	Spasticity, Hyperreflexia, Hyperreflexia (deep-tendon reflexes), Positive pathological reflexes, Absent or reduced superficial reflexes
LOWER	Flaccidity of muscles innervated by involved peripheral nerve, Loss of reflexes, Muscle atrophy, Hyporeflexia or areflexia

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Orthopedic Technology Study Guide

Wolfgang Guggemos



Orthopedic Technology Study Guide:

Orthopaedic Technology Innovation: A Step-by-Step Guide from Concept to Commercialization Adam

Eltorai, Thomas A. Zdeblick, Arnold-Peter C. Weiss, 2019-10-08 Have an idea for a new tool or instrument This a great resource to use to bring your invention ideas to the bedside Written for clinicians researchers students and entrepreneurs this concise yet comprehensive review presents a clear process to identify invent and implement new technology solutions that aid in effective and safe practice in orthopedic surgery Prosthetics and Patient Management Joan Edelstein, Kevin

Carroll, 2024-06-01 Prosthetics and Patient Management A Comprehensive Clinical Approach is an innovative text covering both upper and lower extremity prosthetics All the information clinicians need to manage a range of patients with amputations and their disorders is available in this practical and all inclusive text Kevin Carroll and Joan E Edelstein together with internationally recognized leaders present a multidisciplinary team approach to the care of a patient with an amputation Prosthetics and Patient Management covers practical solutions to everyday problems that clinicians encounter from early prosthetic management to issues facing the more advanced user The text is divided into four sections encompassing the range of subjects that confront practitioners including Early Management Rehabilitation of Patients with Lower Limb Amputation Rehabilitation of Patients with Upper Limb Amputations and Beyond the Basics which includes special considerations for children and futuristic concepts Prosthetics and Patient Management will provide expert guidance for dealing with a wide array of patients and is a must have for clinicians and students in physical therapy certified prosthetists and orthopedists interested in the wide ranging field of prosthetics and amputations *Manual of Enlisted Navy Job Classifications* United States. Bureau of Naval Personnel, 1973 *Orthopedic and Rehabilitation Nursing* V. Barbara

Hynes, 1976 The role of immunophenotype in tumor immunotherapy response Fu Wang, Jian Song, Chuyan Wu, Jimei Wang, 2023-07-03 **Encyclopedia of Associations**, 2006-12 Personalized Orthopedics Osiris Canciglieri

Junior, Miroslav D. Trajanovic, 2022-05-25 This book covers the most important topics in the field of personalized orthopedics It starts with the 3D geometry of the bones focusing on the problem of reverse engineering of the bones It also shows the application of a 3D geometric model of bone for the design of personalized implants and prostheses This book covers the application of additive technologies in personalized orthopedics as well as prediction simulation and optimization in personalized orthopedics Its content provides the necessary knowledge for the transition from classical to personalized orthopedics The authors present an original method for reverse bone engineering the Method of Anatomical Features MAF This method is unique as it enables the reconstruction of the original geometry and topology of the bone even when only data on its part are available The application of this method is shown on the examples of human long bones mandible and hip bone reconstruction This book contains a review of several real cases of personalized implants It gives several examples of prostheses for the design of which a 3D model of bones was used as well as other patient data on the basis of which

personalized prostheses were designed **National Guide to Educational Credit for Training Programs 2004-2005** Jo Ann Robinson, Troy Polite, Nancy Musick, 2004 For more than 25 years this guide has been the trusted source of information on thousands of educational courses offered by business labor unions schools training suppliers professional and voluntary associations and government agencies These courses provide academic credit to students for learning acquired at such organizations as AT T Citigroup Delta Air Lines General Motors University NETg and Walt Disney World Resort Each entry in the comprehensive INational Guide R provides L L DBL Course title L DBL Location of all sites where the course is offered L DBL Length in hours days or weeks L DBL Period during which the credit recommendation applies L DBL Purpose for which the credit was designed L DBL Learning outcomes L DBL Teaching methods materials and major subject areas covered L DBL College credit recommendations offered in four categories by level of degrees and expressed in semester hours and subject areas s in which credit is applicable L L The introductory section includes ACE Transcript Service information For more than 25 years this guide has been the trusted source of information on thousands of educational courses offered by business labor unions schools training suppliers professional and voluntary associations and government agencies These courses provide academic credit to students for learning acquired at such organizations as AT T Citigroup Delta Air Lines General Motors University NETg and Walt Disney World Resort Each entry in the comprehensive INational Guide R provides L L DBL Course title L DBL Location of all sites where the course is offered L DBL Length in hours days or weeks L DBL Period during which the credit recommendation applies L DBL Purpose for which the credit was designed L DBL Learning outcomes L DBL Teaching methods materials and major subject areas covered L DBL College credit recommendations offered in four categories by level of degrees and expressed in semester hours and subject areas s in which credit is applicable L L The introductory section includes ACE Transcript Service information *Resources in Education* ,1982

Encyclopedia of Associations V1 National Org 46 Pt2 ,2008-04 *Telecourse Study Guide* Hooyman, Nancy R.

Hooyman, H. Asuman Kiyak, 2001-08 *Books and Pamphlets, Including Serials and Contributions to Periodicals* Library of Congress. Copyright Office, 1975-07 *Psychology Applied to Teaching* Jack Snowman, Robert Frederick Biehler, 2006

Scaling up excellence is the key to creating a great organisation It s how a small enterprise expands without losing focus It s how a brilliant new idea or plan developed by the few goes on to be adopted by the many And in hard times and tough situations it s how pockets of smart new thinking overcome cultures of indifference or negativity An organisation that doesn t know how to scale up what is best within it won t achieve long term success Bestselling author Robert Sutton and his Stanford colleague Huggy Rao have devoted nearly a decade to uncovering what it takes to create and spread outstanding performance and in *Scaling Up Excellence* they share the fruits of their research Drawing on case studies that range from Silicon Valley enterprises to non profit organisations they provide crucial insights into corporate cultures both good and bad and offer a road map for establishing and stimulating excellence In the process they show how to use premortems when

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