

英文原版

INSALL · SCOTT

膝关节外科学  
SURGERY  
*of the* KNEE

Third Edition

Volume 1



人民卫生出版社



HEALTH SCIENCE ASIA,  
ELSEVIER SCIENCE

# Surgery *of the* Knee

*Volume 1*

Third Edition

## **John N. Insall, MD**

Clinical Professor of Orthopaedic Surgery  
Albert Einstein College of Medicine  
Bronx, New York  
Director, Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine  
Beth Israel Medical Center  
New York, New York

## **W. Norman Scott, MD**

Chairman, Department of Orthopaedic Surgery  
Beth Israel Medical Center  
New York, New York  
Clinical Professor of Orthopaedic Surgery  
Albert Einstein College of Medicine  
Bronx, New York  
Director, Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine  
Beth Israel Medical Center  
New York, New York

Illustrator: Christopher Wikoff, CMI



人民卫生出版社

Health Science Asia, Elsevier Science

人民卫生出版社

Health Science Asia, Elsevier Science

SURGERY OF THE KNEE

Original English Language Edition

Copyright © 2001, 1993, 1984 by Churchill Livingstone

All rights reserved.

Authorized English Reprints

Copyrights © 2001 by Health Science Asia, Elsevier Science.

### 图书在版编目(CIP)数据

膝关节外科学(上、下册)/(美)英赛尔著.影印本. - 北京:  
人民卫生出版社, 2002

ISBN 7-117-04971-5

I. 膝… II. 英… III. 膝关节-关节疾病-矫形外科  
手术学-英文 IV. R687.4

中国版本图书馆 CIP 数据核字 (2002) 第 031217 号

图字: 01-2002-1962

### 膝关节外科学(英文版)

(上、下册)

原 著: John N. Insall 等

出版发行: 人民卫生出版社(中继线 67616688)

地 址: (100078)北京市丰台区方庄芳群园 3 区 3 号楼

网 址: [http://www. pmph. com](http://www.pmph.com)

E - mail: [pmph @ pmph. com](mailto:pmph@pmph.com)

印 刷: 北京人卫印刷厂

经 销: 新华书店

开 本: 880×1230 1/16 印张: 135

字 数: 6482 千字

版 次: 2002 年 8 月第 1 版 2002 年 8 月第 1 版第 1 次印刷

标准书号: ISBN 7-117-04971-5/R·4972

定价(上、下册): 880.00 元

著作权所有,请勿擅自用本书制作各类出版物,违者必究

(凡属质量问题请与本社发行部联系退换)

## ➤ CONTRIBUTORS

### ARMAND ABULENCIA, MD

Island Orthopaedics and Sports  
Medicine,  
Massapequa, NY  
41: *Revision ACL Surgery: How I Do It*

### PAOLO AGLIETTI, MD

Professor of Orthopaedics,  
Director, First Orthopaedic Clinic,  
University of Florence,  
Florence, Italy  
38: *Anterior Cruciate Ligament  
Reconstruction for Chronic Injuries*  
46: *Disorders of the Patellofemoral Joint*  
80: *Meniscal-Bearing Knee Replacement*

### JOSE ALICEA, MD

Assistant Clinical Professor,  
Texas Tech Health Science Center,  
El Paso, TX  
72: *Scoring Systems and Their Validation  
for the Arthritic Knee*

### KYLE ANDERSON, MD

William Clay Ford Center for Athletic  
Medicine,  
Henry Ford Health System,  
Detroit, MI  
41: *Revision ACL Surgery: How I Do It*

### STEVEN PAUL ARNOCKY, DVM

Wade O. Brinker Endowed Professor of  
Surgery,  
College of Veterinary Medicine,  
Professor of Surgery (Orthopaedic),  
College of Human Medicine,  
College of Osteopathic Medicine,  
Director, Laboratory for Comparative  
Orthopaedic Research,  
Michigan State University,  
East Lansing, MI  
23: *Healing of Knee Ligaments and  
Menisci*

### BERNARD R. BACH, JR., MD

Professor, Dept. of Orthopedic Surgery,  
Rush Medical College,  
Director, Sports Medicine Section,  
Rush-Presbyterian-St. Luke's Medical  
Center,  
Chicago, IL  
30: *Knee Laxity Testing Devices*  
40: *Knee Bracing for Athletic Injuries*

### CHAMP L. BAKER, JR., MD

Clinical Assistant Professor of  
Orthopaedics,  
Tulane University School of Medicine,  
New Orleans, LA  
Staff Physician,  
The Hughston Clinic,  
Columbus, GA  
41: *Revision ACL Surgery: How I Do It*

### A. BALDINI, MD

First Orthopaedic Clinic,  
University of Florence,  
Florence, Italy  
80: *Meniscal-Bearing Knee Replacement*

### SANJIV BANSAL, MD

Attending Physician,  
Co-Director, Sports Medicine,  
Southern Chester County Medical  
Center,  
West Grove, PA  
31: *Sports Knee Rating Systems*

### SUE D. BARBER-WESTIN, BS

Director, Clinical Studies,  
Cincinnati Sportsmedicine Research and  
Education Foundation,  
Cincinnati, OH  
42: *Newer Concepts in the Treatment of  
Posterior Cruciate Ligament Ruptures*

### KEITH BAUMGARTEN, MD

The Johns Hopkins University School of  
Medicine,  
Baltimore, MD  
22: *Osteonecrosis of the Knee*

### JAMES H. BEATY, MD

Professor of Orthopaedics,  
Campbell Clinic,  
University of Tennessee,  
Pediatric Orthopaedics,  
Le Bonheur Children's Medical Center,  
Memphis, TN  
65: *Congenital Deformities of the Knee*

### JEFFREY R. BECHLER, MD

Clinical Assistant Professor of Surgery,  
Robert Wood Johnson Medical School,  
New Brunswick, NJ  
1: *Evolution and Embryology of the Knee*

### JACK M. BERT, MD

Clinical Professor,  
University of Minnesota School of  
Medicine,  
Minneapolis, MN  
18: *Arthroscopic Treatment of Degenerative  
Arthritis of the Knee*

### LESLIE J. BISSON, MD

Orthopedic Surgeon,  
Northtown Orthopedics,  
East Amherst, NY  
43: *Posterior Cruciate Ligament Injuries*

### ROBERT E. BOOTH, JR., MD

Chief of Orthopaedics,  
Pennsylvania Hospital,  
Philadelphia, PA  
63: *Periprosthetic Fractures*

### ROBERT B. BOURNE, MD

A.D. McLachlin Professor of  
Orthopaedic Surgery,  
London Health Sciences Centre,  
University of Western Ontario,  
Chief, Adult Reconstruction Clinical  
Teaching Unit,  
London Health Sciences Centre,  
London, Ontario, Canada  
81: *Patellar Replacement in Total Knee  
Arthroplasty*

### MARC F. BRASSARD, MD

Staff Physician,  
Orthopedic and Sports Medicine,  
Maryland Hip and Knee Center,  
Annapolis, MD  
87: *Complications of Total Knee  
Arthroplasty*  
88: *Revision of Aseptic Failed Total Knee  
Arthroplasty*

### K. K. BRIGGS, MBA

Director for Clinical Research,  
Steadman Hawkins Sports Medicine  
Foundation,  
Vail, CO  
16: *Débridement and Microfracture ("Pick  
Technique") for Full-Thickness Articular  
Cartilage Defects*

### THOMAS E. BROWN, MD

Clinical Instructor,  
University of Virginia School of  
Medicine,  
Orthopaedic Surgeon,  
University of Virginia Hospital,  
Charlottesville, VA  
62: *Fractures of the Patella*

### PETER G. BULLOUGH, MD

Professor of Pathology,  
Weill Medical College of Cornell  
University,  
New York Presbyterian Hospital,  
Director of Laboratory Medicine,  
Hospital for Special Surgery,  
Attending Pathologist,  
The New York Hospital,  
New York, NY  
23: *Healing of Knee Ligaments and  
Menisci*

### MARK L. BURMAN, MD

Assistant Professor of Surgery,  
Division of Orthopedic Surgery,  
McGill University,  
Montreal, Quebec, Canada  
67: *Physeal Fractures About the Knee*

### ALBERT H. BURSTEIN, PhD

Senior Scientist Emeritus,  
Hospital for Special Surgery,  
New York, NY  
8: *Basic Biomechanics*

**ROBERTO BUZZI, MD**

Assistant in Orthopaedics,  
First Orthopaedic Clinic,  
University of Florence,  
Florence, Italy  
46: *Disorders of the Patellofemoral Joint*

**BERNARD R. CAHILL, MD**

Clinical Professor,  
University of Illinois College of  
Medicine,  
Peoria, IL  
19: *Treatment of Juvenile Osteochondritis  
of the Knee*

**JOHN J. CALLAGHAN, MD**

Professor, Dept. of Orthopaedics,  
Professor, Dept. of Bioengineering,  
University of Iowa College of Medicine,  
University of Iowa Hospital and Clinics,  
Iowa City, IA  
92: *Knee Arthrodesis and Resection  
Arthroplasty*

**S. TERRY CANALE, MD**

Professor of Orthopaedics,  
Chief of Staff,  
Campbell Clinic,  
University of Tennessee,  
Memphis, TN  
65: *Congenital Deformities of the Knee*

**W. DILWORTH CANNON, JR., MD**

Professor of Clinical Orthopaedic  
Surgery,  
Director of Sports Medicine,  
University of California,  
San Francisco, CA  
25: *Arthroscopic Meniscal Repair*

**WILLIAM G. CLANCY, JR., MD**

Clinical Professor of Orthopedics,  
University of Alabama,  
Fellowship Director,  
American Sports Medicine Institute,  
Orthopedic Surgeon,  
Healthsouth Medical Center,  
Birmingham, AL  
43: *Posterior Cruciate Ligament Injuries*

**HENRY D. CLARKE, MD**

Attending Orthopaedic Surgeon,  
Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine,  
Beth Israel Medical Center,  
New York, NY  
2: *Anatomy*  
3: *Anatomic Aberrations*  
73: *Historical Development, Classification,  
and Characteristics of Knee Prostheses*

**CLIFFORD W. COLWELL, MD**

Clinical Professor,  
Dept. of Orthopaedics and  
Rehabilitation,  
School of Medicine,  
University of California, San Diego,  
Adjunct Professor,

Dept. of Basic Science and Clinical  
Research,  
The Scripps Research Institute,  
Director, Musculoskeletal Centers of  
Excellence, Scripps Clinic,  
Head, Division of Orthopaedic Surgery,  
Scripps Clinic,  
La Jolla, CA  
83: *Thrombophlebitis in Knee Arthroplasty*

**LAWRENCE S. CROSSETT, MD**

Division of Adult Reconstruction,  
Dept. of Orthopaedic Surgery,  
University of Pittsburgh Medical Center,  
Pittsburgh, PA  
89: *Extensor Mechanism Disruption After  
Total Knee Arthroplasty*

**FRED D. CUSHNER, MD**

Assistant Clinical Professor of  
Orthopaedic Surgery,  
Albert Einstein College of Medicine of  
Yeshiva University,  
Bronx, NY  
Attending Orthopaedic Surgeon,  
Beth Israel Medical Center,  
Director of Insall Scott Kelly Institute  
for Orthopaedics and Sports  
Medicine,  
Beth Israel Medical Center,  
New York, NY  
2: *Anatomy*  
24: *Arthroscopic Meniscal Resection*  
34: *Anterior Cruciate Ligament  
Reconstruction With Bone-Patella  
Tendon-Bone Autograft: Indications,  
Technique, Complications, and  
Management*  
59: *Soft-Tissue Considerations About the  
Knee: Prevention and Treatment of  
Problems*

**A. LEE DELLON, MD**

Professor of Plastic Surgery and  
Neurosurgery,  
The Johns Hopkins University School of  
Medicine,  
Director, Institute of Peripheral Nerve  
Surgery,  
Baltimore, MD  
85: *Partial Denervation for the Treatment  
of Painful Neuromata Complicating  
Total Knee Replacement*

**DOUGLAS A. DENNIS, MD**

Professor, Colorado School of Mines,  
Golden, CO  
Assistant Clinical Professor,  
Dept. of Orthopaedic Surgery,  
UCHSC,  
Medical Director,  
Rose Institute for Joint Replacement,  
Clinical Director,  
Rocky Mountain Musculoskeletal  
Research Laboratory,  
Denver, CO  
78: *Fluoroscopic Analysis of Total Knee  
Replacement*  
93: *Revision Knee Arthroplasty: How I Do  
It*

**DAVID R. DIDUCH, MD**

Assistant Professor of Orthopaedic  
Surgery,  
University of Virginia,  
Charlottesville, VA  
62: *Fractures of the Patella*

**LAWRENCE D. DORR, MD**

Director, The Bone and Joint Institute,  
Good Samaritan Hospital,  
Los Angeles, CA  
93: *Revision Knee Arthroplasty: How I Do  
It*

**CLIVE P. DUNCAN, MD**

Dept. of Orthopaedics,  
Vancouver Hospital and Health  
Sciences Centre,  
Vancouver, British Columbia, Canada  
91: *Cement Spacers in Knee Surgery*

**MARK E. EASLEY, MD**

Assistant Professor,  
Division of Orthopaedic Surgery,  
Duke University Medical Center,  
Durham, NC  
24: *Arthroscopic Meniscal Resection*  
48: *Quadriceps and Patellar Tendon  
Disruptions*  
74: *Surgical Techniques and  
Instrumentation in Total Knee  
Arthroplasty*  
80: *Meniscal-Bearing Knee Replacement*

**MALCOLM L. ECKER, MD**

Associate Professor of Orthopaedic  
Surgery,  
University of Pennsylvania School of  
Medicine,  
Attending Surgeon,  
University of Pennsylvania Hospital,  
Associate Surgeon,  
Children's Hospital of Philadelphia,  
Philadelphia, PA  
21: *Spontaneous Osteonecrosis*

**GERALD A. ENGH, MD**

Associate Clinical Professor,  
University of Maryland Medical School,  
Baltimore, MD  
Staff Physician,  
Mt. Vernon Hospital,  
President, Anderson Orthopaedic  
Research Institute,  
Alexandria, VA  
93: *Revision Knee Arthroplasty: How I Do  
It*

**PHILIP M. FARIS, MD**

St. Frances Hospital—Mooresville,  
Center for Hip and Knee Surgery,  
Mooresville, IN  
82: *Transfusion Considerations in Total  
Knee Arthroplasty*

**DERMOT R. FITZGIBBON, MD**

Assistant Professor,  
University of Washington School of  
Medicine,



Attending Anesthesiologist,  
Pain Service,  
University of Washington Medical  
Center,  
Seattle, WA  
*57: Pain Management in Knee Surgery*

**ANDREW G. FRANKS, JR., MD**  
Associate Professor,  
New York University School of  
Medicine,  
Chief of Connective Tissue Disease  
Section,  
Charles C. Harris Skin and Cancer  
Center,  
Attending Rheumatologist,  
Hospital for Joint Diseases,  
New York University Medical Center,  
New York, NY  
*49: Inflammatory Arthritis of the Knee*

**M. A. R. FREEMAN, MD**  
Professor, School of Engineering  
Sciences,  
Southampton University, Hampshire,  
UK  
Honorary Consultant Orthopaedic  
Surgeon,  
The Barts and The London NHS Trust,  
London, UK  
*10: The Shapes and Relative Movements of  
the Femur and Tibia in the Unloaded  
Cadaveric Knee: A Study Using MRI as  
an Anatomical Tool*  
*69: Surgical Pathology of Arthritis*

**MARC J. FRIEDMAN, MD**  
Assistant Clinical Professor,  
Division of Orthopaedics,  
UCLA School of Medicine,  
Los Angeles, CA  
Attending Orthopaedic Surgeon,  
Southern California Orthopaedic  
Institute,  
Van Nuys, CA  
*35: Arthroscopic Anterior Cruciate  
Reconstruction With Hamstring  
Tendons: Indications, Surgical  
Technique, Complications, and Their  
Treatment*

**FREDDIE H. FU, MD**  
Professor and Chairman,  
Dept. of Orthopaedic Surgery,  
University of Pittsburgh,  
Pittsburgh, PA  
*58: Gene Therapy in Treatment of Knee  
Disorders*

**JOHN P. FULKERSON, MD**  
Clinical Professor,  
University of Connecticut,  
Farmington, CT  
*47: Surgery of the Patellofemoral Joint:  
Indications, Effects, Results, and  
Recommendations*

**BRADLEY S. GALER, MD**  
Director of Clinical Studies,  
Director, Program for Pain Due to  
Nerve Injury,  
Dept. of Pain Medicine and Palliative  
Care,  
Beth Israel Medical Center,  
New York, NY  
*53: Complex Regional Pain Syndromes,  
Types I (Reflex Sympathetic Dystrophy)  
and II (Causalgia)*

**JOHN C. GARRETT, MD**  
Resurgens Orthopaedics,  
St. Joseph's Hospital,  
Atlanta, GA  
*20: Osteochondritis Dissecans II: The Adult  
Form*

**BERNARD GHELMAN, MD**  
Professor of Radiology,  
Weill Medical College of Cornell  
University,  
Attending Radiologist,  
Hospital for Special Surgery,  
New York, NY  
*4: Imaging of the Knee*  
*94: Bone Tumors and Tumor-Like Lesions  
of the Knee*

**FRANCESCO GIRON, MD**  
First Orthopaedic Clinic,  
University of Florence,  
Florence, Italy  
*38: Anterior Cruciate Ligament  
Reconstruction for Chronic Injuries*

**E. M. GOBLE, MD**  
Associate Clinical Professor,  
Dept. of Orthopedics,  
University of Utah,  
Salt Lake City, UT  
*27: Meniscal Allograft Transplantation*

**VIPOOL K. GORADIA, MD**  
Attending Physician,  
Sports Medicine Specialist,  
Roanoke Orthopaedic Center,  
Roanoke, VA  
*31: Sports Knee Rating Systems*

**WILLIAM A. GRANA, MD, MPH**  
Professor and Chairman,  
Dept. of Orthopedics,  
University of Arizona,  
Tucson, AZ  
*67: Physeal Fractures About the Knee*

**EDWARD S. GROOM, PhD**  
Professor of Applied Mechanics,  
Dept. of Aerospace Engineering and  
Engineering Mechanics,  
University of Cincinnati,  
Director, Noyes-Giannestras  
Biomechanics Laboratory,  
University of Cincinnati,  
Cincinnati, OH  
*42: Newer Concepts in the Treatment of  
Posterior Cruciate Ligament Ruptures*

**FARES S. HADDAD, BSC, MCH,  
FRCS**  
Consultant Orthopaedic Surgeon,  
University College London Hospitals,  
London, UK  
*91: Cement Spacers in Knee Surgery*

**LÁSZLÓ HANGODY, MD, PhD**  
Uzsoki Hospital,  
Orthopaedic and Trauma Dept.,  
Budapest, Hungary  
*14: Mosaicplasty*

**ARLEN D. HANSEN, MD**  
Associate Professor of Orthopaedic  
Surgery,  
Mayo Medical School,  
Rochester, MN  
*70: Osteotomy About the Knee: American  
Perspective*  
*92: Knee Arthrodesis and Resection  
Arthroplasty*

**MARY E. HARDWICK, MSN**  
Nurse Specialist, Orthopaedic Research,  
Scripps Clinic,  
La Jolla, CA  
*83: Thrombophlebitis in Knee Arthroplasty*

**CHRISTOPHER D. HARNER, MD**  
Chief, Division of Sports Medicine,  
Blue Cross of Western Pennsylvania  
Professor of Orthopaedic Surgery,  
University of Pittsburgh Medical Center,  
Pittsburgh, PA  
*6: Neurophysiology of the Knee*  
*44: The Dislocated Knee*

**STEVEN F. HARWIN, MD**  
Associate Clinical Professor of  
Orthopaedic Surgery,  
Albert Einstein College of Medicine,  
Chief, Adult Reconstructive Surgery,  
Dept. of Orthopaedic Surgery,  
Beth Israel Medical Center,  
New York, NY  
*93: Revision Knee Arthroplasty: How I Do  
It*

**JOHN H. HEALEY, MD**  
Chief, Orthopaedic Surgery,  
Memorial Sloan-Kettering Cancer  
Center,  
New York, NY  
*95: Bone and Soft-Tissue Tumors Around  
the Knee*

**DAVID L. HELFET, MD**  
Professor of Orthopaedic Surgery,  
Weill Medical College of Cornell  
University,  
Director, Orthopaedic Trauma Service,  
Hospital for Special Surgery,  
New York Presbyterian Hospital,  
New York, NY  
*60: Supracondylar and Distal Femoral  
Fractures*  
*61: Tibial Plateau Fractures*

**TIMOTHY M. HOSEA, MD**

Clinical Assistant Professor of Surgery,  
Robert Wood Johnson Medical School,  
New Brunswick, NJ  
*1: Evolution and Embryology of the Knee*

**JOHNNY HUARD, PHD**

Assistant Professor,  
Director, Growth and Development  
Laboratory,  
Dept. of Orthopaedic Surgery and  
Molecular Genetics and  
Biochemistry,  
Children's Hospital of Pittsburgh,  
Pittsburgh, PA  
*58: Gene Therapy in Treatment of Knee Disorders*

**DAVID S. HUNGERFORD, MD**

Professor of Orthopaedic Surgery,  
The Johns Hopkins University School of  
Medicine,  
Chief, Division of Arthritis Surgery,  
Good Samaritan Hospital,  
Baltimore, MD  
*22: Osteonecrosis of the Knee*  
*28: Nonoperative Treatment of Knee Arthritis*  
*85: Partial Denervation for the Treatment of Painful Neuromata Complicating Total Knee Replacement*

**MARC W. HUNGERFORD, MD**

Assistant Professor of Orthopaedic  
Surgery,  
Division of Arthritis Surgery,  
The Johns Hopkins University School of  
Medicine,  
Baltimore, MD  
*28: Nonoperative Treatment of Knee Arthritis*

**ERNST B. HUNZIKER, MD**

Institute Director,  
M.E. Müller Institute for Biomechanics,  
University of Bern,  
Bern, Switzerland  
*12: Articular Cartilage Biology and Biomechanics*

**PETER A. INDELICATO, MD**

Professor,  
University of Florida,  
Head Team Physician,  
University Athletic Association,  
Gainesville, FL  
*32: Medial and Lateral Ligament Injuries of the Knee*

**JOHN N. INSALL, MD**

Clinical Professor of Orthopaedic  
Surgery,  
Albert Einstein College of Medicine,  
Bronx, NY  
Director, Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine,  
Beth Israel Medical Center,  
New York, NY

*2: Anatomy**3: Anatomic Aberrations**46: Disorders of the Patellofemoral Joint**73: Historic Development, Classification, and Characteristics of Knee Prostheses**74: Surgical Techniques and Instrumentation in Total Knee Arthroplasty**77: Total Knee Arthroplasty With Posterior Cruciate Ligament Substitution Designs**80: Meniscal-Bearing Knee Replacement**87: Complications of Total Knee Arthroplasty**88: Revision of Aseptic Failed Total Knee Arthroplasty***H. IWAKI, MD**

Instructor,  
Dept. of Orthopaedic Surgery,  
Osaka City University Medical School,  
Osaka, Japan  
*10: The Shapes and Relative Movements of the Femur and Tibia in the Unloaded Cadaveric Knee: A Study Using MRI as an Anatomical Tool*

**DON JOHNSON, MD**

Clinical Assistant Professor of  
Orthopedic Surgery,  
University of Ottawa,  
Director, Sports Medicine Clinic,  
Carleton University,  
Ottawa, Ontario, Canada  
*36: Anterior Cruciate Ligament Reconstruction With Semitendinosus*

**S. M. KANE, MD**

Assistant Professor  
Division of Sports Medicine,  
Dept. of Orthopaedics: Rehabilitation,  
University of Texas  
Medical Branch at Galveston,  
Galveston, TX  
*27: Meniscal Allograft Transplantation*

**BERTRAND P. KAPER, MD**

Clinical Fellow,  
The University of Western Ontario,  
London, Ontario, Canada  
Clinical Fellow, Adult Reconstruction,  
London Health Sciences Centre,  
London, Ontario, Canada  
*81: Patellar Replacement in Total Knee Arthroplasty*

**E. MICHAEL KEATING, MD**

St. Frances Hospital— Mooresville,  
Center for Hip and Ankle Surgery,  
Mooresville, IN  
*82: Transfusion Considerations in Total Knee Arthroplasty*

**MICHAEL A. KELLY, MD**

Assistant Clinical Professor of  
Orthopaedic Surgery,  
Albert Einstein College of Medicine,  
Bronx, NY  
Head, Sports Medicine Dept. of  
Orthopaedics,

Director, Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine,  
Beth Israel Medical Center,  
New York, NY  
*45: Dislocation of the Proximal Tibiofemoral Joint*

**JOHN J. KLIMKIEWICZ, MD**

Clinical Instructor of Sports Medicine,  
Dept. Of Orthopaedic Surgery,  
Georgetown University Medical Center,  
Washington, DC  
*6: Neurophysiology of the Knee*  
*44: The Dislocated Knee*

**MININDER S. KOCHER, MD**

Assistant Professor of Orthopaedic  
Surgery,  
Harvard Medical School,  
Program in Clinical Effectiveness,  
Harvard School of Public Health,  
Attending Orthopaedic Surgeon,  
Children's Hospital,  
Boston, MA  
*66: The Pediatric Knee— Evaluation and Treatment*

**RICHARD D. KOMISTEK, PHD**

Associate Professor,  
Colorado School of Mines,  
President, Rocky Mountain  
Musculoskeletal Research  
Laboratory,  
Co-Director, FBDMS Center,  
Golden, CO  
*78: Fluoroscopic Analysis of Total Knee Replacement*

**SUNDAR KOPPOLU, MD**

Chairman, Department of  
Anesthesiology,  
Beth Israel Medical Center,  
New York, NY  
*55: Anesthetic Considerations in Knee Surgery: The Ambulatory Patient*

**PAUL F. LACHIEWICZ, MD**

Professor, Dept. of Orthopaedics,  
University of North Carolina School of  
Medicine,  
Chapel Hill, NC  
*51: Hemophilia and Knee Arthropathy*

**SCOTT M. LEPHART, PHD**

Neuromuscular Research Laboratory,  
University of Pittsburgh,  
Pittsburgh, PA  
*6: Neurophysiology of the Knee*

**JESS LONNER, MD**

Assistant Professor of Orthopaedic  
Surgery,  
University of Pennsylvania School of  
Medicine,  
Attending Orthopaedic Surgeon,  
University of Pennsylvania Hospital,  
Philadelphia, PA  
*21: Spontaneous Osteonecrosis*

**PAUL A. LOTKE, MD**

Professor of Orthopaedic Surgery,  
University of Pennsylvania School of  
Medicine,  
Chief, Implant Service,  
University of Pennsylvania Hospital,  
Philadelphia, PA  
21: *Spontaneous Osteonecrosis*

**STEPHEN G. MANIFOLD, MD**

Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine,  
Beth Israel Medical Center,  
New York, NY  
34: *Anterior Cruciate Ligament  
Reconstruction With Bone-Patella  
Tendon-Bone Autograft: Indications,  
Technique, Complications, and  
Management*  
41: *Revision ACL Surgery: How I Do It*

**LAURA LEWIS MANTELL, MD**

Associate Attending Anesthesiologist,  
Beth Israel Medical Center,  
New York, NY  
57: *Pain Management in Knee Surgery*

**VLADIMIR MARTINEK, MD**

Sports Medicine Fellow,  
Dept. of Orthopaedic Surgery,  
Musculoskeletal Research Center,  
University of Pittsburgh,  
Pittsburgh, PA  
58: *Gene Therapy in Treatment of Knee  
Disorders*

**BASSAM A. MASRI, MD**

Clinical Associate Professor and Head  
of Reconstructive Orthopaedics,  
University of British Columbia,  
Vancouver, Canada  
91: *Cement Spacers in Knee Surgery*

**HENRY MASUR, MD**

Chief, Critical Care Medicine Dept.,  
Warren G. Magnuson Clinical Center,  
National Institutes of Health,  
Bethesda, MD  
52: *HIV Infection and Its Relationship to  
Knee Disorders*

**KEVIN R. MATH, MD**

Assistant Professor of Radiology,  
Albert Einstein College of Medicine,  
Bronx, NY  
Attending Radiologist,  
Section Head—Musculoskeletal  
Imaging,  
Beth Israel Medical Center,  
New York, NY  
2: *Anatomy*  
4: *Imaging of the Knee*

**K. JEFFREY MATTEONI, MD**

Fellow, Section of Sports Medicine,  
Department of Orthopaedic Surgery,  
Rush Medical College,  
Rush-Presbyterian-St. Luke's Medical  
Center,

Chicago, IL

30: *Knee Laxity Testing Devices*  
40: *Knee Bracing for Athletic Injuries*

**LESLIE S. MATTHEWS, MD**

Chairman of Orthopedics,  
Associate Professor at The Johns  
Hopkins University School of  
Medicine,  
Union Memorial Hospital,  
Baltimore, MD  
31: *Sports Knee Rating Systems*

**GREGORY A. MENCIO, MD**

Associate Professor,  
Dept. of Orthopaedics and  
Rehabilitation,  
Vanderbilt University School of  
Medicine,  
Nashville, TN  
64: *Normal Growth and Development in  
the Skeletally Immature Knee*

**MICHAEL MERKLEY, MD**

Associate Professor,  
Dept. of Surgery,  
University of Illinois College of  
Medicine,  
Staff Physician,  
Midwest Orthopaedic Center,  
Peoria, IL  
33: *Anterior Cruciate Ligament  
Reconstruction With Patellar Tendon  
Graft*

**KAROLA MESSNER, MD, PHD**

Professor, Head of Division of Sports  
Medicine,  
Department of Neuroscience and  
Locomotion,  
Faculty of Health Sciences,  
University Linköping,  
Linköping, Sweden  
13: *Healing of Articular Cartilage Injuries*

**LYLE J. MICHELI, MD**

Associate Clinical Professor of  
Orthopaedic Surgery,  
Harvard Medical School,  
Director, Division of Sports Medicine,  
Children's Hospital,  
Boston, MA  
66: *The Pediatric Knee—Evaluation and  
Treatment*

**TIMOTHY S. MOLOGNE, MD**

Commander, U.S. Navy,  
Dept. of Orthopedic Surgery,  
Naval Medical Center,  
San Diego, CA  
35: *Arthroscopic Anterior Cruciate  
Reconstruction With Hamstring  
Tendons: Indications, Surgical  
Technique, Complications, and Their  
Treatment*

**MICHAEL A. MONT, MD**

Associate Professor, Orthopaedics,

The Johns Hopkins University School of  
Medicine,

Good Samaritan Hospital,  
Baltimore, MD

22: *Osteonecrosis of the Knee*

28: *Nonoperative Treatment of Knee  
Arthritis*

85: *Partial Denervation for the Treatment  
of Painful Neuromata Complicating  
Total Knee Replacement*

**J. CRAIG MORRISON, MD**

Chief Resident,  
Dept. of Orthopaedics and  
Rehabilitation,  
Vanderbilt University School of  
Medicine,  
Nashville, TN  
64: *Normal Growth and Development in  
the Skeletally Immature Knee*

**THOMAS J. MULVEY, MD**

Associate Clinical Instructor,  
University of Illinois College of  
Medicine,  
Peoria, IL  
90: *Infected Total Knee Arthroplasty*

**DAVID G. NAZARIAN, MD**

Clinical Assistant Professor of  
Orthopaedic Surgery,  
University of Pennsylvania School of  
Medicine,  
Attending Physician,  
Dept. of Orthopaedic Surgery,  
Pennsylvania Hospital,  
Philadelphia, PA  
63: *Periprosthetic Fractures*

**FRANK R. NOYES, MD**

Adjunct Professor,  
Dept. of Aerospace Engineering and  
Engineering Mechanics,  
University of Cincinnati,  
Director, Cincinnati Sportsmedicine  
Research and Education Foundation,  
Cincinnati, OH  
42: *Newer Concepts in the Treatment of  
Posterior Cruciate Ligament Ruptures*

**MARK W. PAGNANO, MD**

Assistant Professor of Orthopaedic  
Surgery,  
Mayo School of Medicine,  
Consultant, Dept. of Orthopaedic  
Surgery,  
Mayo Clinic,  
Rochester, MN  
86: *Bone Graft, Wedges, and Augments in  
Total Knee Arthroplasty*

**LONNIE E. PAULOS, MD**

Orthopaedic Surgeon,  
Orthopaedic Specialty Hospital,  
Medical Director,  
Orthopaedic Biomechanics Institute,  
Salt Lake City, UT  
39: *Rehabilitation of the Surgically  
Reconstructed and Nonsurgical Anterior  
Cruciate Ligament*



# HELENE PAVLOV, MD

Professor of Radiology,  
Weill Medical College,  
Cornell University,  
New York, NY  
Radiologist-in-Chief,  
Dept. of Radiology and Imaging,  
Hospital for Special Surgery,  
New York, NY  
4: *Imaging of the Knee*

# HENRIK B. PEDERSEN, MD

Director, Medical Multimedia,  
Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine,  
Beth Israel Medical Center,  
New York, NY  
2: *Anatomy*

# LARS PETERSON, MD, PHD

Associate Professor,  
Dept. of Orthopaedics,  
University of Göteborg,  
Clinical Director,  
Gothenburg Medical Center,  
Gothenburg, Sweden  
14: *International Experience With  
Autologous Chondrocyte  
Transplantation*

# RUSSELL S. PETRIE, MD

Southcoast Orthopaedic Associates,  
Newport Beach, CA  
44: *The Dislocated Knee*

# V. PINSKEROVA, MD

Orthopaedic Surgeon,  
Affiliated Teacher,  
First Faculty Medicine,  
Prague, Czech Republic  
10: *The Shapes and Relative Movements of  
the Femur and Tibia in the Unloaded  
Cadaveric Knee: A Study Using MRI as  
an Anatomical Tool*

# PASCAL POILVACHE, MD

Associate Professor,  
Dept. of Orthopaedic Surgery,  
Catholic University of Louvain,  
Attending Orthopaedic Surgeon,  
Saint-Luc University Hospital,  
Brussels, Belgium  
71: *Osteotomy for the Arthritic Knee: A  
European Perspective*

# W. R. POST, MD

Associate Professor, Vice-Chairman,  
Chief, Section of Sports Medicine and  
Shoulder Surgery,  
Department of Orthopedics,  
West Virginia University School of  
Medicine,  
Morgantown, WV  
47: *Surgery of the Patellofemoral Joint:  
Indications, Effects, Results, and  
Recommendations*

# JAMES A. RAND, MD

Mayo Clinic Hospital,  
Scottsdale, AZ  
76: *Results of Posterior Cruciate-  
Preserving Total Knee Arthroplasty*

# BRUCE REIDER, MD

Professor of Surgery,  
Section of Orthopaedic Surgery,  
University of Chicago,  
Director of Sports Medicine,  
University of Chicago Hospital,  
Chicago, IL  
41: *Revision ACL Surgery: How I Do It*

# AIMAN RIFAI, DO

Fellow, Orthopaedics,  
The Johns Hopkins University School of  
Medicine,  
Baltimore, MD  
22: *Osteonecrosis of the Knee*

# KAYVON S. RIGGI, MD

Clinical Instructor,  
Dept. of Orthopedics,  
University of Minnesota,  
Attending Orthopedic Surgeon,  
Minneapolis Bone and Joint Institute,  
Abbott Northwestern Hospital,  
Minneapolis, MN  
76: *Results of Posterior Cruciate-  
Preserving Total Knee Arthroplasty*

# W. G. RODKEY, DVM

Director of Basic Science Research,  
Steadman Hawkins Sports Medicine  
Foundation,  
Vail, CO  
16: *Débridement and Microfracture ("Pick  
Technique") for Full-Thickness Articular  
Cartilage Defects*

# J. J. RODRIGO, MD

Dept. of Orthopaedics,  
University of California at Davis,  
Sacramento, CA  
16: *Débridement and Microfracture ("Pick  
Technique") for Full-Thickness Articular  
Cartilage Defects*

# CECIL H. RORABECK, MD

Professor and Chair,  
Division of Orthopaedic Surgery,  
London Health Science Centre,  
University of Western Ontario,  
London, Ontario, Canada  
93: *Revision Knee Arthroplasty: How I Do  
It*

# HARRY E. RUBASH, MD

Professor and Chief,  
Dept. of Orthopaedic Surgery,  
Massachusetts General Hospital,  
Boston, MA  
89: *Extensor Mechanism Disruption After  
Total Knee Arthroplasty*

# FERNANDO SANCHEZ, MD

Joint Replacement Fellow,  
Anderson Orthopaedic Research  
Institute,  
Anderson Orthopaedic Clinic,  
Alexandria, VA  
93: *Revision Knee Arthroplasty: How I Do  
It*

# ROBERT SCHNEIDER, MD

Hospital for Special Surgery,  
New York, NY  
4: *Imaging of the Knee*

# W. NORMAN SCOTT, MD

Chairman, Department of Orthopaedic  
Surgery,  
Beth Israel Medical Center,  
New York, NY  
Clinical Professor of Orthopaedic  
Surgery,  
Albert Einstein Medical College,  
Bronx, NY  
Director, Insall Scott Kelly Institute for  
Orthopaedics and Sports Medicine,  
Beth Israel Medical Center,  
New York, NY  
2: *Anatomy*  
3: *Anatomic Aberrations*  
24: *Arthroscopic Meniscal Resection*  
29: *Classification of Knee Ligament  
Injuries*  
34: *Anterior Cruciate Ligament  
Reconstruction With Bone-Patella  
Tendon-Bone Autograft: Indications,  
Technique, Complications, and  
Management*  
41: *Revision ACL Surgery: How I Do It*  
45: *Dislocation of the Proximal  
Tibiofibular Joint*  
59: *Soft-Tissue Considerations About the  
Knee: Prevention and Treatment of  
Problems*

# RICHARD D. SCOTT, MD

Professor of Orthopaedic Surgery,  
Harvard Medical School,  
Senior Surgeon,  
Brigham and Women's Hospital,  
New England Baptist Hospital,  
Boston, MA  
75: *Unicompartmental Total Knee  
Arthroplasty*

# SUSAN CRAIG SCOTT, MD

Plastic Surgeon and Hand Surgeon,  
Private Practice,  
New York, NY  
59: *Soft-Tissue Considerations About the  
Knee: Prevention and Treatment of  
Problems*

# GILES R. SCUDERI, MD

Assistant Clinical Professor of  
Orthopedic Surgery,  
Albert Einstein College of Medicine,  
Bronx, NY  
Associate Chief, Adult Knee  
Reconstruction,  
Dept. of Orthopedic Surgery,

Beth Israel Medical Center,  
New York, NY  
7: *Surgical Approaches to the Knee*  
29: *Classification of Knee Ligament Injuries*  
48: *Quadriceps and Patellar Tendon Disruptions*  
87: *Complications of Total Knee Arthroplasty*  
88: *Revision of Aseptic Failed Total Knee Arthroplasty*

**ALISON SELLECK, MD**  
Clinic Physician,  
National Institute of Allergy and Infectious Disease,  
Warren G. Magnuson Clinical Center,  
National Institutes of Health Critical Care Medicine Dept.,  
Bethesda, MD  
52: *HIV Infection and Its Relationship to Knee Disorders*

**NIGEL E. SHARROCK, MB, CHB**  
Senior Scientist,  
Hospital for Special Surgery,  
New York, NY  
56: *Anesthetic Considerations in Knee Surgery—Choice of Anesthesia and the Relationship to DVT*

**KONSEI SHINO, MD, PHD**  
Professor,  
Osaka Prefectural College of Health Sciences,  
Clinical Associate Professor,  
Osaka University Medical School,  
Osaka, Japan  
37: *Allograft Anterior Cruciate Ligament Reconstruction*

**J. SILLIMAN, MD**  
Beth Israel Medical Center,  
New York, NY  
16: *Débridement and Microfracture ("Pick Technique") for Full-Thickness Articular Cartilage Defects*

**SHELDON R. SIMON, MD**  
Professor of Clinical Orthopaedic Surgery,  
Albert Einstein College of Medicine of Yeshiva University,  
Chief, Division of Pediatric Orthopaedics,  
Attending Staff, Adult Foot and Ankle,  
Beth Israel Medical Center,  
New York, NY  
9: *Gait—Normal and Abnormal*

**RAJ K. SINHA, MD, PHD**  
Assistant Professor,  
Director, Ferguson Laboratory,  
Dept. of Orthopaedic Surgery,  
University of Pittsburgh Medical Center,  
Pittsburgh, PA  
89: *Extensor Mechanism Disruption After Total Knee Arthroplasty*

**E. SINK, MD**  
Intern,  
Steadman Hawkins Sports Medicine Foundation,  
Vail, CO  
16: *Débridement and Microfracture ("Pick Technique") for Full-Thickness Articular Cartilage Defects*

**ANTHONY T. SORKIN, MD**  
Orthopedic Surgeon Specializing in Trauma,  
Rockford Orthopedic Associates,  
Rockford, IL  
60: *Supracondylar and Distal Femur Fractures*

**CARL L. STANITSKI, MD**  
Professor of Orthopaedic Surgery,  
Medical University of South Carolina,  
Charleston, SC  
68: *Anterior Cruciate Ligament Injuries and Acute Tibial Eminence Fractures in Skeletally Immature Patients*

**J. R. STEADMAN, MD**  
Co-Chairman and Founder,  
Steadman Hawkins Sports Medicine Foundation,  
Vail, CO  
16: *Débridement and Microfracture ("Pick Technique") for Full-Thickness Articular Cartilage Defects*

**STEVEN H. STERN, MD**  
Associate Professor of Clinical Orthopaedics,  
Northwestern University,  
Attending Physician,  
Northwestern Memorial Hospital,  
Chicago, IL  
77: *Total Knee Arthroplasty With Posterior Cruciate Ligament Substitution Designs*

**KEVIN R. STONE, MD**  
Orthopaedic Surgeon,  
The Stone Clinic,  
Chairman, The Stone Foundation for Sports Medicine and Arthritis Research,  
San Francisco, CA  
17: *Articular Cartilage Repair—The Paste Graft Technique*  
26: *Meniscus Regeneration by Collagen Meniscus Scaffolding*

**CHARLES BUZ SWANIK, PHD**  
Director, Graduate Athletic Training/  
Sports Medicine,  
Department of Kinesiology,  
Temple University,  
Philadelphia, PA  
6: *Neurophysiology of the Knee*

**JAMES TAYLOR, MB, CHB, FRACS**  
Clinical Senior Lecturer,  
Christchurch School of Medicine,  
University of Otago,  
Orthopaedic Surgeon,

Canterbury Health,  
Christchurch, New Zealand  
93: *Revision Knee Arthroplasty: How I Do It*

**GLENN C. TERRY, MD**  
Staff Physician,  
Hughston Sports Medicine Foundation, Inc.,  
Columbus, GA  
33: *Anterior Cruciate Ligament Reconstruction With Patellar Tendon Graft*

**SOMUSANDARAM THIAGARAJAH, MD**  
Clinical Professor of Anesthesiology,  
Albert Einstein College of Medicine,  
Bronx, NY  
Attending Anesthesiologist,  
Beth Israel Medical Center,  
New York, NY  
55: *Anesthetic Considerations in Knee Surgery: The Ambulatory Patient*

**THOMAS S. THORNHILL, MD**  
Chairman, Dept. of Orthopedic Surgery,  
Brigham and Women's Hospital,  
Boston, MA  
90: *Infected Total Knee Arthroplasty*

**ALFRED J. TRIA, JR., MD**  
Clinical Professor of Surgery,  
Robert Wood Johnson Medical School,  
New Brunswick, NJ  
1: *Evolution and Embryology of the Knee*  
5: *Clinical Examination of the Knee*

**PAUL S. TUMBER, MD**  
Acting Assistant Professor,  
University of Washington School of Medicine,  
Attending Anesthesiologist, Pain Service,  
Harborview Medical Center,  
Seattle, WA  
57: *Pain Management in Knee Surgery*

**VINCENT J. VIGORITA, MD**  
Professor of Pathology and Orthopaedic Surgery,  
State University Health Sciences Center,  
Medical Director,  
Lutheran Medical Center,  
Brooklyn, NY  
2: *Anatomy*  
50: *The Synovium: Normal and Pathological Conditions*  
94: *Bone Tumors and Tumor-Like Lesions of the Knee*

**KELLY G. VINCE, MD**  
Associate Professor,  
Dept. of Orthopedic Surgery,  
University of Southern California,  
Los Angeles, CA  
93: *Revision Knee Arthroplasty: How I Do It*

**WALTER W. VIRKUS, MD**

Assistant Professor of Orthopaedic Surgery,  
Rush Medical College,  
Orthopedic Trauma Attending,  
Rush-Presbyterian-St. Luke's Medical Center,  
Chicago, IL  
*61: Tibial Plateau Fractures*

**VIRGINIA D. WADE, MD**

Beth Israel Medical Center,  
New York, NY  
*54: Anesthesia*

**JAMES A. WALKER, PHD**

Adjunct Associate Professor,  
University of Utah,  
Sport Science Director,  
Orthopedic Specialty Hospital,  
Salt Lake City, UT  
*39: Rehabilitation of the Surgically Reconstructed and Nonsurgical Anterior Cruciate Ligament*

**PETER S. WALKER, PHD**

Professor and Director of Biomedical Engineering,  
The Cooper Union for the Advancement of Science and Art,  
New York, NY  
*11: Design Criteria for Total Knee Replacement*

**CARA E. WALTHER, MD**

Attending Surgeon—Sports Medicine,  
Desert Bone and Joint Specialists,  
Bend, OR  
*39: Rehabilitation of the Surgically Reconstructed and Nonsurgical Anterior Cruciate Ligament*

**WILLIAM C. WARNER, JR., MD**

Associate Professor of Orthopaedic Surgery,  
Campbell Clinic,  
University of Tennessee,  
Memphis, TN  
*65: Congenital Deformities of the Knee*

**GEOFFREY H. WESTRICH, MD**

Assistant Attending Orthopaedic Surgeon,  
Hospital for Special Surgery,  
New York, NY  
*84: Mechanical Compression Treatment for the Prevention of Thrombophlebitis*

**LEO A. WHITESIDE, MD**

Clinical Professor of Orthopaedic Surgery,  
St. Louis University,  
Director, Biomechanical Research Foundation,  
Director, Missouri Bone and Joint Center,  
Chief of Staff, Barnes-Jewish West County Hospital,  
St. Louis, MO  
*79: Cementless Total Knee Designs*

**THOMAS J. WICKIEWICZ, MD**

Professor of Clinical Orthopaedic Surgery,  
Weill Medical College, Cornell University,  
Chief, Sports Medicine and Shoulder Service,  
Hospital for Special Surgery,  
New York, NY  
*41: Revision ACL Surgery: How I Do It*

**RILEY J. WILLIAMS III, MD**

Assistant Professor,  
Weill Medical College, Cornell University,  
Assistant Attending Orthopaedic Surgeon,  
Hospital for Special Surgery,  
New York, NY  
*41: Revision ACL Surgery: How I Do It*

**MARCY WONG, PHD**

M.E. Müller Institute for Biomechanics,  
University of Bern,  
Bern, Switzerland  
*12: Articular Cartilage Biology and Biomechanics*

**TIMOTHY M. WRIGHT, PHD**

Senior Scientist,  
Section Head, Biomechanics and Biomaterials Department,  
Hospital for Special Surgery,  
New York, NY  
*8: Basic Biomechanics*

## ➤ PREFACE

Twenty-five years ago, the adolescent with knee pain unresponsive to immobilization, with subsequent atrophy and increasing disability afterwards, underwent a totally unnecessary arthrotomy and meniscectomy, sometimes preceded by a very inaccurate arthrography.

When symptoms persisted, the other meniscus was usually considered the source of discomfort, and the treatment was unsuccessfully repeated. Then, with the evolution of failed arthrotomies, the patella was believed to be the culprit. Unfortunately, there was no nonoperative or operative intervention that was universally successful. Surgically, distal and then proximal realignments were performed on almost all types of "chondromalacia" complaints. Anterior cruciate ligament injuries, if diagnosed, were treated in a spectrum from purposeful neglect to an assortment of combined intra- and extra-articular reconstructions. The recovery from these procedures was truly, in today's perspective, a tribute to the dedication of the patient and therapist and somewhat of a warning to avoid surgery!

Unfortunately, many of these patients' knee disorders led to post-traumatic arthritis unresponsive to most nonsteroidal anti-inflammatory medicines; thus, they were candidates for an osteotomy. Even though the osteotomy would probably not be indicated today, there were no other surgical options. Today, a better understanding of clinical diagnosis, imaging techniques, and rehabilitative modalities has eliminated many unnecessary surgeries. Arthroscopy has revolutionized the diagnosis and treatment of cartilage lesions and ligament disruptions. Total knee arthroplasty, on the other hand, has yielded unparalleled success in alleviating patients' discomfort while eliminating their disability.

This 25-year retrospective view is, I believe, somewhat predictive of how we will perceive the contribution of classic textbooks to continuing medical education. As we enter the digital century, if not millennium, it is increasingly difficult to accept the analog world's perpetual lag of inadequacy of the published word while attempting to enhance education and subsequently new breakthrough treatments for our patients. Thus, we have attempted in this two-volume comprehensive color text to "bridge the gap" between the analog and digital worlds. In combining our two previous textbooks, *Surgery of the Knee* and *The Knee*, we have solicited the contributions of national and international experts recognized worldwide by serious knee students.

This textbook consists of 95 chapters divided into 11 sections. In Basic Science (Section I) we have introduced an interactive CD-ROM combining the anatomical and imaging chapters. While we believe this approach, either by CD or through Internet access, is the future, practical considerations precluded us from presenting the entire book in this format at this time. The CD takes studying, browsing, and researching anatomy and imaging in a new direction. Thanks to Drs. Clarke

and Pedersen, the CD contains an extensive collection of medical data pertaining to anatomy, anatomical aberrations, imaging, and surgical exposures. We believe this is truly a breakthrough in understanding comprehensive knee anatomy.

In Biomechanics (Section II), Dr. Michael Freeman has truly enhanced our understanding of the dynamics of knee motion in an extensive MRI-controlled model of knee motion. The remainder of this section reinforces basic principles of knee biomechanics and explains the relationship of the knee to normal and abnormal gait.

Healing articular cartilage defects has enticed orthopaedists since the beginning of our specialty. Today, the enthusiasm seems to be at fever pitch. Thus, we have included many, if not all, of the therapeutic approaches by the recognized international originators of the technique. From Europe to the United States, contributors lay the foundation for what will hopefully be therapeutic success in the year to come.

Although the more than 150 contributors to this edition are too numerous to focus on individually, there are some especially innovative chapters that deserve special attention. Chapter 41, "Revision ACL Surgery: How I Do It," allows the reader to see step-by-step the "pearls" of various experts on how they approach this difficult problem in the operating theater.

With increasing focus on recreational athletics, the problems with the pediatric knee are becoming more manifest. Thus, Chapters 64 to 68 give the reader the opportunity to learn from pediatric orthopaedists on normal growth and development, congenital deformities, physeal fractures, and dealing with ACL injuries in skeletally immature patients.

Almost a quarter of this text is devoted to knee replacement and surgical alternatives. The success of the former necessitates such an approach. Osteotomy, however, must not be forgotten; thanks to Drs. Hansen and Poilvache, we get both the European and American perspective. The standard issues with knee replacement, designs, technique, thrombophlebitis, skin problems (Section VII), infection, and complications requiring revision surgery are extensively detailed. Just as with revision ACL surgery, there are six sections devoted to revision TKR surgery. The diversity of surgical approaches and "tips" is truly priceless.

It is a true honor to have collaborated with my mentor, partner, and, most importantly, friend in publishing this comprehensive text. Dr. Insall's published works on all aspects of knee surgery are unparalleled. For me to have continued my "residency" under his guidance for the past 2 years has been a gift beyond measure.

On behalf of all the authors, we hope that you, the reader, are stimulated by this text to learn, analyze your observations, challenge thoughtfully, and make a contribution that will ultimately help your patients!

W. Norman Scott, MD

## **ACKNOWLEDGMENTS**

We would like to express our appreciation to Dr. Henrik Pedersen, whose tireless efforts made the CD a reality; Pam Trester, for relentless pursuit of all the details, without which we would never have com-

pleted this text; and, of course, Ruth O'Sullivan, whose constant vigilance makes it all happen!

*John N. Insall, MD*  
*W. Norman Scott, MD*



## ➤ ACKNOWLEDGMENTS

The editors and authors would like to thank the following companies for their unrestricted educational grants:

Association of Professional Team Physicians

Insall Scott Research Foundation

NuTech

Rhône-Poulenc Rorer Pharmaceuticals, Inc. (Lovenox)

Sulzer Orthopedics

Aircast Incorporated

DePuy Orthopedics

Ethicon

Genzyme Tissue Repair

Johnson & Johnson Professional, Inc.

Linvatec

Nutramax Laboratories, Inc.

Ortho Biotech Inc.

OrthoLogic

Stryker Howmedica Osteonics

Wright Medical Technology, Inc.

Zimmer

## ➤ INTRODUCTION

The third edition of *Surgery of the Knee* is fundamentally different from the first and second editions in that this textbook is now combined with *The Knee* edited by Dr. Norman Scott. This change has resulted in an infusion of new ideas that perhaps will make the book more relevant to the new millennium. In particular, there is a "How I Do It" section of surgical techniques from a panel of well-known experts and a new anatomy section by Dr. Henry Clarke.

With this edition, we have included an interactive CD containing basic science about the knee. A product of new technology, the CD provides search and cross-referencing capabilities beyond what is possible in print. I believe the interactivity, the 3D knee model, and extensive cross-referencing of material on the CD makes it a useful teaching and reference tool for both the novice and the veteran surgeon.

The result is a mixture of new and old: for example, Dr. Michael Freeman has contributed a "classic" chap-

ter on the pathology of arthritis (after all, pathology remains constant) and has contributed to an entirely new chapter on how the knee moves, based on insights gained from recent anatomical investigations, which I believe will be thought-provoking for many readers.

Also new is the inclusion of some color illustrations, which I expect will add interest and brighten the pages.

This edition has benefited from some ruthless pruning, removing material from the first edition (unfortunately, most of it written by myself).

It has been my pleasure to work with my long-time friend and colleague Norman Scott, whose energy and enthusiasm have produced this edition in record time. The information contained is thus as up-to-date as is possible in a textbook.

*John N. Insall, MD*

## ABOUT THE CD-ROM

The CD-ROM bound into Volume 1 provides multimedia capacity to browse, search, and study the anatomy, biomechanics, and imaging of the knee. In addition to material drawn from the printed work, the CD-ROM also includes high-quality photographs of cadaver dissections; color-coded illustrations; large collections of MRIs, x-ray films, and bone scans of the normal and abnormal knee; arthroscopic video of anatomical structures and significant injuries; motion MRI sequences; and video clips demonstrating key surgical exposures.

As indicated by icons on the Table of Contents, five chapters form a linear core of information for individuals who wish to study knee anatomy, biomechanics, and imaging. In addition, a graphic interface enables the user to explore specific structures of the knee, using multiple modalities in an interactive manner.

A booklet packaged with the CD-ROM provides detailed technical information and functional descriptions.

—*The Publisher*

### **NOTICE**

Orthopedics is an ever-changing field. Standard safety precautions must be followed, but as new research and clinical experience broaden our knowledge, changes in treatment and drug therapy become necessary or appropriate. Readers are advised to check the most current product information provided by the manufacturer of each drug to be administered to verify the recommended dose, the method and duration of administration, and the contraindications. It is the responsibility of the treating physician, relying on experience and knowledge of the patient, to determine dosages and the best treatment for the patient. Neither the publisher nor the editor assumes any liability for any injury and/or damage to persons or property arising from this publication.

THE PUBLISHER