

Mri In Practice

Magnetic Resonance Imaging is a rapidly expanding technology used in diagnostic radiology. To fully appreciate its capabilities, readers will find a comprehensive guide to MRI physics and essential concepts and how they are linked to practical applications. Provides an excellent explanation of component parts plus information on instrumentation, site-planning, and safety. Includes glossary, index, and end-of-chapter questions and answers. Illustrated.

Magnetic resonance imaging (MRI) is a type of scan used to diagnose health conditions that affect organs, tissue and bone. MRI scanners use strong magnetic fields and radio waves to produce detailed images of the inside of the body. Divided into two sections, this concise guide introduces radiology trainees to the principles, sequences and interpretation of MRI. The first section describes the basic principles, instrumentation and interpretation of MRI, whilst the second section discusses the higher applications of the technique. Authored by Canadian radiologist Govind Chavhan, this second edition includes 250 images and illustrations, as well as a photo CD, to assist trainees with learning. Key points New edition introducing radiology trainees to principles, sequences and interpretation of MRI Authored by Canadian radiology specialist Features 250 images and illustrations Includes photo CD First edition published in 2007

Propelling quantitative MRI techniques from bench to bedside, Quantitative MRI in Cancer presents a range of quantitative MRI methods for assessing tumor biology. It includes biophysical and theoretical explanations of the most relevant MRI techniques as well as examples of these techniques in cancer applications. The introductory part of the book covers basic cancer biology, theoretical aspects of NMR/MRI physics, and the hardware required to form MR images. Forming the core of the book, the next three parts illustrate how to characterize tissue properties with endogenous and exogenous contrast mechanisms and discuss common image processing techniques relevant for cancer. The final part explores emerging areas of MR cancer characterization, including radiation therapy planning, cellular and molecular imaging, pH imaging, and hyperpolarized MR. Each of the post-introductory chapters describes the salient qualitative and quantitative aspects of the techniques before proceeding to preclinical and clinical applications. Each chapter also contains references for further study. Leading the way toward more personalized medicine, this text brings together existing and emerging quantitative MRI techniques for assessing cancer. It provides a self-contained overview of the theoretical and experimental essentials and state of the art in cancer MRI.

This extensively illustrated volume has been specifically geared towards optimal use of MRI systems. The text provides essential theoretical background information: Imaging acquisition and potential pitfalls are also examined in detail. Most importantly, structured guidelines are provided on the interpretation of clinical data in the wide range of cardiac pathology

that can be encountered.

This highly illustrated book provides practical and pragmatic guidance in breast MRI for all professionals involved in breast imaging or the care of patients with breast diseases.

MRI Made Easy

MRI in Epilepsy

Practical Textbook of Cardiac CT and MRI

Clinical Cardiac MRI

An Illustrated Guide for Common Pathologies

Equine MRI is a unique, comprehensive guide to MRI in the horse. Edited by Rachel Murray, a leading authority and researcher in the field with over ten years of equine clinical MRI experience, the book also includes contributions from worldwide experts in the subject. Divided into the following four sections, the book presents key information based on previous validation work and clinical practice: Principles of MRI, including the practicalities of image acquisition and interpretation Normal MRI anatomy and normal variations Different types of pathological change Options for clinical management and prognosis for different conditions MRI is a rapidly expanding area in veterinary medicine that confers detailed, three-dimensional information on both bone and soft tissue. Expanding clinical knowledge, improvements in technology, and practical application of MRI to the standing and recumbent horse means this useful imaging modality has become an integral and essential part of the diagnostic evaluation in lameness and is a realistic option for investigation of ophthalmological, neurological and cranial pathology.

Equine MRI enables readers to understand the best ways to achieve good quality images, and provides a detailed explanation of the problems that may occur. With close to 950 normal and abnormal images, this book offers considerable detail and examples of both common and uncommon problems, making it a great reference for equine veterinarians, veterinary students, specialists in equine surgery, and specialists in veterinary imaging.

Using images and anatomic illustrations, Rad Tech's Guide toMRI: Imaging Procedures, Patient Care, and Safety provides thereader with a quick overview of MRI for quick reference andexamination preparation. As part of the Rad Tech's GuideSeries, this volume features an overview of anatomy, imagingtips, scanning procedures, and the latest information onprotocols--all in the context of patient care and safety. Each book in the Rad Tech's Guide Series covers theessential basics for those preparing for their certifyingexaminations and those already in practice.

MRI in PracticeJohn Wiley & Sons

Practical Small Animal MRI is the seminal reference for clinicians using Magnetic Resonance Imaging in the diagnosis and treatment of veterinary patients. Although MRI is used most frequently in the diagnosis of neurologic disorders, it also has

significant application to other body systems. This book covers normal anatomy and specific clinical conditions of the nervous system, musculoskeletal system, abdomen, thorax, and head and neck. It also contains several chapters on disease of the brain and spine, including inflammatory, infectious, neoplastic, and vascular diseases, alongside congenital and degenerative disorders.

MRI from Picture to Proton presents the basics of MR practice and theory in a unique way: backwards! The subject is approached just as a new MR practitioner would encounter MRI: starting from the images, equipment and scanning protocols, rather than pages of physics theory. The reader is brought face-to-face with issues pertinent to practice immediately, filling in the theoretical background as their experience of scanning grows. Key ideas are introduced in an intuitive manner which is faithful to the underlying physics but avoids the need for difficult or distracting mathematics. Additional explanations for the more technically inquisitive are given in optional secondary text boxes. The new edition is fully up-dated to reflect the most recent advances, and includes a new chapter on parallel imaging. Informal in style and informed in content, written by recognized effective communicators of MR, this is an essential text for the student of MR.

Cardiovascular MRI in Practice

MRI in Practice

Imperial Technoscience

MRI of the Whole Body

Essentials of Body MRI

Review Questions for MRI

The newest title in the popular Case Review Series, Duke Review of MRI Principles, by Wells Mangrum, MD; Kimball Christianson, MD; Scott Duncan, MD; Phil Hoang, MD; Allen W. Song, PhD; and Elmar Merkle, MD, uses a case-based approach to provide you with a concise overview of the physics behind magnetic resonance imaging (MRI). Written by radiology residents, practicing radiologists, and radiology physicists, this multidisciplinary text introduces you to the basic physics of MRI and how they apply to successful and accurate imaging, interpretation, and diagnosis. Clinically relevant cases with associated questions and images reinforce your understanding of essential principles needed to confidently interpret a wide range of MRI images for all organ systems. Review the basic physics of MRI in a concise, high-yield manner and learn how to apply them for successful and accurate imaging, interpretation, and diagnosis. Master 17 essential MRI principles you need to know through clinically relevant cases accompanied by associated questions and 600 images that reinforce your understanding and help you confidently interpret a wide range of MRI images. Effectively diagnose disease in all organ systems. Authors are fellowship-trained in each body system - neuro, breast, body, vascular and MSK, providing you with practical guidance in every area Focus on the information that's most relevant to

your needs from a multidisciplinary author team comprised of radiology residents, practicing radiologists and radiology physicists. See the underlying simplicity behind MRI physics. Despite employing the same MRI principles, similar imaging systems use slightly different names. A simplified explanation of these principles and how they are applied to each body system deepens your understanding and helps avoid any confusion. All the MRI physics that the resident needs to understand to comfortably interpret MRI

MRI is a continually evolving and expanding subject making an ever-increasing impact on medical practice. There are many comprehensive large MRI textbooks on the market but there is a distinct lack of short pocket-sized reference books to suit the growing number of people from various disciplines working in the medical imaging field today. This book provides an easily accessible source of reference material to supplement existing large texts.

This book teaches readers how to interpret, read, and dictate musculoskeletal (MSK) MRI studies through a series of very high yield MSK MRI cases. The amount of knowledge needed to practice radiology can be daunting. This is especially true when the radiologist has to read studies in a subspecialty outside their expertise such as MSK MRI where there are numerous disease entities, complex orthopedic anatomy, and many imaging considerations to navigate. Learning how to read MSK MRI studies is often taught during a lengthy fellowship; however, many radiologists do not have this additional training but still must read MSK studies during their routine clinical practice. This book fills that educational gap for practicing radiologists reading MSK MRI. The cases in the book focus on the conditions that radiologists encounter most frequently in their daily clinical work, making it very high yield for the amount of time needed to read it. The cases are organized by the six major joints (shoulder, elbow, wrist/hand, pelvis/hip, knee, ankle/foot). Three additional chapters discussing tumors, arthropathy, and miscellaneous conditions are also included. Each case begins with carefully selected high quality MRI images accompanied by a brief clinical vignette. Next, a concise report (as if one is dictating an official report) describing the imaging findings, impression, and recommendations for management are provided. This sample dictation offers readers direct examples of how to report their own cases. There is then a discussion section which mimics teaching sessions that would occur between specialist trainees and MSK faculty members at the workstation so as to enable the readers to think like a MSK radiologist. At the end of each case a Report Checklist is given to highlight important findings to consider and include in your final report. Lastly, we have included a section with 19 normal MSK MRI dictation templates that can be used for structured reporting. This book is an ideal guide for anyone who deals with MSK MRI on a regular basis, including general radiologists who have not completed a dedicated MSK radiology fellowship, MSK radiologists who would want to brush up on their MSK MRI reading and reporting skills, radiology fellows/residents, and orthopedic and sports medicine

physicians and nurse practitioners.

MRI PHYSICS MRI PHYSICS TECH TO TECH EXPLANATIONS Technologists must have a solid understanding of the physics behind Magnetic Resonance Imaging (MRI), including safety, the hows and whys of the quantum physics of the MR phenomenon, and how to competently operate MRI scanners. Generating the highest quality images of the human body involves thorough knowledge of scanner hardware, pulse sequences, image contrast, geometric parameters, and tissue suppression techniques. *MRI Physics: Tech to Tech Explanations* is designed to help student MRI technologists and radiotherapists preparing for Advanced MRI certification examinations to better understand difficult concepts and topics in a quick and easy manner. Written by a highly experienced technologist, this useful guide provides clear and reader-friendly coverage of what every MR Technologist needs to know. Topics include safety considerations associated with the magnetic field and RF, pulse sequences, artifacts, MRI math, the much-feared gradients, and I.V. contrast. Provides basic guidance on safety considerations, protocols options, critical thinking, and image contrast optimization Simplifies the challenging topic of MRI physics using straightforward language and clear explanations Covers content for American Registry of Radiologic Technologists (ARRT) and Continuing Qualifications Requirements (CQR) exams Features numerous illustrations and photographs of various MRI concepts, pulse sequence design, artifacts, and the application of concepts in clinical settings *MRI Physics: Tech to Tech Explanations* is a must-have resource for the experienced and training MRI technologist, medical students, and radiology residency rotations.

The field of magnetic resonance imaging (MRI) has developed rapidly over the past decade, benefiting greatly from the newly developed framework of compressed sensing and its ability to drastically reduce MRI scan times. *MRI: Physics, Image Reconstruction, and Analysis* presents the latest research in MRI technology, emphasizing compressed sensing-based image reconstruction techniques. The book begins with a succinct introduction to the principles of MRI and then: Discusses the technology and applications of T1rho MRI Details the recovery of highly sampled functional MRIs Explains sparsity-based techniques for quantitative MRIs Describes multi-coil parallel MRI reconstruction techniques Examines off-line techniques in dynamic MRI reconstruction Explores advances in brain connectivity analysis using diffusion and functional MRIs Featuring chapters authored by field experts, *MRI: Physics, Image Reconstruction, and Analysis* delivers an authoritative and cutting-edge treatment of MRI reconstruction techniques. The book provides engineers, physicists, and graduate students with a comprehensive look at the state of the art of MRI.

MRI at a Glance

Transnational Histories of MRI in the United States, Britain, and India

Fetal MRI

Basic Principles and Applications

MRI in Practice, Fifth Edition

Essentials for Innovative Technologies

Ensure high-quality diagnostic images with this practical scanning reference! Designed to help you plan and acquire MRI images, Handbook of MRI Scanning, by Geraldine Burghart and Carol Ann Finn, includes the step-by-step scanning protocols you need to produce optimal images. Coverage of all body regions prepares you to perform virtually any scan. Going beyond the referencing and recognition of three-plane, cross-sectional anatomy, each chapter demonstrates appropriate slice placements, typical midline images of each plane, and detailed line drawings of the pertinent anatomy corresponding to the midline images. With this handbook, you can conceptualize an entire scan and its intended outcome prior to performing the scan on a patient. Keep the book at your console -- it's ideal for quick reference! Consistent, clinically based layout of the sections makes scanning information easy to use with three images per page to demonstrate clinical sequences in MRI examinations. Handy, pocket size offers easy, immediate access right at the console. 600 images provide multiple views and superb anatomic detail. Suggested technical parameters are provided in convenient tables for quick reference with space to write in site-specific protocols or equipment variations.

The optimal use of magnetic resonance imaging poses a constant challenge as the technology is continually and rapidly advancing. This leaves the MR practitioner, beginner or experienced, in constant need of up-to-date, easily read and well illustrated material presenting the clinical constellation of pathologies as seen by an MRI scanner in such an effective way. MRI of the Whole Body sets out to educate trainee and experienced radiologists, radiographers and clinicians regarding key sequences for optimal imaging of common pathologies, with simple explanations on the choice of a particular MR sequence. The authors present typical and representative examples with relevant clinical and imaging features to assist a better understanding of these commonly encountered conditions. Every unit begins with a quick anatomy review, and each case is described in a standardised format with a clinical background, key sequences, imaging features, and practical hints as to close differentials and ways to distinguish between them. A text of this nature is essential for all MR practitioners whatever their background: medical, technical or scientific. Key features: First of its kind as no other book covers all body systems in one volume with demonstration of all key imaging sequences in the commonly diagnosed pathologies Up-to-date sequences described with reasons for choosing a particular sequence for a particular case Simplified relevant MR anatomy preceding each unit Clear high resolution images with appropriate legends Practical hints and tips section included for each pathology - close differentials and what to do next Written in a simple, lucid format and accompanied by typical illustrations to each case MRI of the Whole Body is an essential guide to

understanding the 'what's, 'why's and 'how's of applied MR. It will be of particular value to trainee and practicing radiologists, as well as MR radiographers and radiography students.

Cardiovascular MR imaging has become a robust, clinically useful mod- ity, and the rapid pace of innovation and important information it conveys have attracted many students whose goal is to become adept practitioners. In turn, many excellent textbooks have been written to aid this process. These books are necessary and useful in helping the student learn the underlying pulse sequences used in CMR, as well as the imaging findings in a variety of disorders. However, one of the difficulties inherent in learning CMR from a book is that the printed format is not the ideal medium to d- play the dynamic imaging that comprises a typical CMR case. For instance, it may be difficult to perceive focal areas of wall motion abnormality on serial static pictures, but these abnormalities are often easily seen on cine loops. One might say that trying to learn CMR solely from a standard textbook with illustrations is like trying to learn to drive by looking at snapshots obtained through the windshield of a moving car. The learner needs to see the cardiac motion and decide if it is normal or abnormal; he or she needs to be in the driver's seat. An additional limitation of the ava- able textbooks on CMR is that while they often have superb illustrations of abnormal findings, these images have been preselected. This comprehensive survey of the analytical treatment of MRI physics and engineering brings the reader to a position to cope with the problems that arise when applying MRI to medical problems or when (sub)systems or sequences for new applications are designed.

This fifth edition of the most accessible introduction to MRI principles and applications from renowned teachers in the field provides an understandable yet comprehensive update. Accessible introductory guide from renowned teachers in the field Provides a concise yet thorough introduction for MRI focusing on fundamental physics, pulse sequences, and clinical applications without presenting advanced math Takes a practical approach, including up-to-date protocols, and supports technical concepts with thorough explanations and illustrations Highlights sections that are directly relevant to radiology board exams Presents new information on the latest scan techniques and applications including 3 Tesla whole body scanners, safety issues, and the nephrotoxic effects of gadolinium-based contrast media

Handbook of MRI Technique

Equine MRI

Handbook of MRI Scanning - E-Book

Quantitative MRI in Cancer

A User's Guide to Principles, Technology, and Applications

A Guide to Evaluation and Reporting

Essentials of MRI Safety is a comprehensive guide that enables practitioners to recognise and assess safety risks and follow appropriate safety procedures in clinical practice. The text covers all the vital aspects of clinical MRI safety, including the bio-effects of MRI, magnetic occupational exposure, scanning passive and active implants, MRI suite design, institutional governance, and more. Complex equations are stripped back to present the foundations of theory and physics necessary to understand each topic, from the basic laws of magnetism to spatial gradient maps of common MRI scanners. Written by an internationally recognised MRI author, educator, and MRI safety expert, this textbook: Reflects the most current research, guidelines, and MRI safety information Explains procedures for scanning pregnant women, MRI noise exposure, and handling emergency situations Prepares candidates for the American Board of MR Safety exam and other professional certifications Aligns with MRI safety roles such as MR Medical Director (MRMD), MR Safety Officer (MRSO) and MR Safety Expert (MRSE). Contains numerous illustrations, figures, self-assessment tests, key references, and extensive appendices Essentials of MRI Safety is an essential text for all radiographers and radiologists, as well as physicists, engineers, and researchers with an interest in MRI.

MRI in Practice continues to be the number one reference book and study guide for the registry review examination for MRI offered by the American Registry for Radiologic Technologists (ARRT). This latest edition offers in-depth chapters covering all core areas, including: basic principles, weighting and contrast, spin and gradient echo pulse sequences, spatial encoding, k-space, protocol optimization, artefacts, instrumentation, and safety. The leading MRI reference book and study guide. Now with a greater focus on the physics behind MRI. Offers, for the first time, clear explanations and scan tips. Brand new chapters on MRI equipment, vascular imaging and safety. Presented in full color, with additional illustrations and high-quality MRI images to aid understanding. Includes refined, updated and expanded content throughout, along with new tips and practical applications. Features a new glossary. MRI in Practice is an important text for radiographers, technologists, radiology students, radiologists, and other students and professionals working within imaging, including medical physicists and nurses.

MRI: Essentials for Innovative Technologies describes novel methods to improve magnetic resonance imaging (MRI) beyond its current limitations. It proposes smart encoding methods and acquisition sequences to deal with frequency displacement due to residual static magnetic field inhomogeneity, motion, and undersampling. Requiring few or no hardware modifications, these speculative methods offer building blocks that can be refined to overcome barriers to more advanced MRI applications, such as real-time imaging and open systems. After a concise review of mathematical tools and the physics of MRI, the book describes the severe artifacts produced by conventional MRI techniques. It first discusses field inhomogeneities, outlining conventional solutions as well as a completely different approach based on time-varying gradients and time-frequency variation coding (acceleration). The book then proposes two innovative acquisition methods for reducing acquisition time, motion, and undersampling artifacts: adaptive acquisition and compressed sensing. The concluding chapter lays out the author's predictions for the future. For some of the proposed solutions, this is the first time the reported results have been published. Where experimental data is preliminary or unavailable, the book presents only numerical solutions. Offering insight into emerging MRI techniques, this book provides readers with the knowledge to help them design better acquisition sequences and select appropriate correction methods. The author's proceeds from this book will be entirely donated to Bambin Gesù Children's Hospital in Rome.

The origin of modern science is often located in Europe and the West. This Euro/West-centrism relegates emergent practices elsewhere to the periphery, undergirding analyses of contemporary transnational science and technology with traditional but now untenable hierarchical models. In this book, Amit Prasad examines features of transnationality in science and technology through a study of MRI research and development in the United States, Britain, and India. In an analysis that is both theoretically nuanced and empirically robust, Prasad unravels the entangled genealogy

research, practice, and culture in these three countries. Prasad follows sociotechnical trails in relation to five aspects of MRI research: industrial development, market, history, and culture. He first examines the well-known dispute between American scientists Paul Lauterborn and Raymond Damadian over the invention of MRI, then describes the post-invention emergence of the technology, as the center of MRI research moved from Britain to the U.S; the marketing of the MRI and the transformation of MRI research into a corporate-powered "Big Science"; and the development of MRI in India, beginning with work in India's nuclear magnetic resonance (NMR) laboratories in the 1940s. Finally, he explores the different dominant technocultures in each of the three countries, analyzing scientific cultures as shifting products of transnational histories rather than stable national scientific identities and cultures. Prasad's analysis offers not only an innovative contribution to current debates within science and technology studies but also an original postcolonial perspective on the history of cutting-edge medical technology.

Essentials of Body MRI extensively covers the field, offering clear and detailed guidance on MRI as an invaluable tool for the primary diagnosis and problem solving of diseases of the body, including the abdomen, liver, pancreas, pelvis, heart, urinary tract, and great vessels. The beginning chapters focus on the physics, pulse sequences, and other practical considerations related to body MR imaging, explained in an easy to understand way so that the reader fully comprehend the imaging appearance of clinical disease. The remaining chapters discuss clinical applications, with topics ranging from the normal anatomic structures and diagnosis of abdominal, pelvic, cardiac, and vascular diseases to the modality's role as a tool for solving diagnostic problems. The key points of each chapter are boxed as Essentials to Remember for rapid review and learning. Written in clear, concise text, and featuring 887 figures and numerous tables, *Essentials of Body MRI* is a resource that radiology residents, fellows, and anyone interested in learning about Body MRI, will turn to again and again.

Brain Imaging with MRI and CT

Practical Small Animal MRI

MRI of the Knee

Breast MRI in Practice

The Basics

MRI Physics

Quantitative MRI of the Spinal Cord is the first book focused on quantitative MRI techniques with specific application to the human spinal cord. This work includes coverage of diffusion-weighted imaging, magnetization transfer imaging, relaxometry, functional MRI, and spectroscopy. Although these methods have been successfully used in the brain for the past 20 years, their application in the spinal cord remains problematic due to important acquisition challenges (such as small cross-sectional size, motion, and susceptibility artifacts). To date, there is no consensus on how to apply these techniques; this book reviews and synthesizes state-of-the-art methods so users can successfully apply them to the spinal cord. *Quantitative MRI of the Spinal Cord* introduces the theory behind each quantitative technique, reviews each theory's applications in the human spinal cord and describes its pros and cons, and suggests a simple protocol for applying each quantitative technique to the spinal cord. Chapters authored by international experts in the field of MRI of the spinal cord. Contains "cooking recipes"—examples of imaging parameters for each quantitative technique—designed to aid researchers and clinicians in using them in

practice Ideal for clinical settings

** New revised second edition now available, with errors corrected and content fully updated ** The second edition of the classic text has been revised and extended to meet the needs of today's practising and training MRI technologists who intend to sit for the American Registry of Magnetic Resonance Imaging Technologists (ARMRIT) examination. It provides Q&As on topics listed in the content specifications offered by the American Registry for Radiologic Technologists (AART) and offers the user with a comprehensive review of the principles and applications of MRI to prepare them for the examination.

Now in its updated Third Edition, MRI: The Basics is an easy-to-read, clinically relevant introduction to the physics behind MR imaging. The book features large-size, legible equations, state-of-the-art images, instructive diagrams, and questions and answers that are ideal for board review. The American Journal of Radiology praised the previous edition as "an excellent text for introducing the basic concepts to individuals interested in clinical MRI." This edition spans the gamut from basic physics to multi-use MR options to specific applications, and has dozens of new images. Coverage reflects the latest advances in MRI and includes completely new chapters on k-space, parallel imaging, cardiac MRI, and MR spectroscopy.

Most imaging books are ordered according to underlying etiology. However, in real life clinical practice, radiologists usually make their differential diagnoses according to the image patterns, as the etiology is often unknown. Brain Imaging with MRI and CT presents over 180 disease processes and normal variants, grouping entities by these basic patterns to accentuate differential diagnostic features. High quality CT and MRI scans show multiple typical and distinguishing images for each entity. Common and unusual clinical scenarios are described, including dilated perivascular spaces, capillary teleangiectasia, Susac's syndrome and desmoplastic infantile ganglioglioma. Both basic and advanced imaging techniques are used, reflecting the reality of clinical practice. This image-focused book emphasises the most pertinent clinical information relevant to the diagnostic process. Trainee and practising radiologists will find Brain Imaging with MRI and CT an invaluable and clinically relevant tool for learning and teaching.

Students of radiology and radiography at both undergraduate and postgraduate level often experience difficulty in learning MRI techniques. This book provides concise, easily accessible information on MRI physics which can be used as a revision tool. Topics covered include relaxation processes, image contrast, pulse sequences, image production, image quality, artefacts, MRA, instrumentation and safety. Double page spreads for each section will contain a diagram and/or image depicting the main concepts of MR physics together with a succinct account of the topic in bullet points and tables.

Physics, Image Reconstruction, and Analysis

Sectional Anatomy for Imaging Professionals - E-Book

Rad Tech's Guide to MRI

Essentials of MRI Safety

Musculoskeletal MRI

Physical Principles, Related Applications, and Ongoing Developments

MRI can play an important role in identifying and localizing epileptogenic foci. This book aims to provide the clinical and imaging information required in order to decide whether an MRI scan is appropriate and whether it is likely to be sufficient to detect a lesion. The first part presents background information on epilepsy patients and explains how to perform an MRI examination. Detailed attention is paid to full MRI and post-processing, and the examination of subcategories of patients is also discussed. The second part of the book then documents findings obtained in the full range of epileptogenic lesions with the aid of high-quality images. Throughout, emphasis is placed on guiding the reader in the correct interpretation of the imaging findings. Both radiologists and referring physicians will find this book to be an indispensable guide to the optimal use of MRI in epilepsy.

This is the most comprehensive book to be written on the subject of fetal MRI. It provides a practical hands-on approach to the use of the latest MRI techniques and the optimization of sequences. Fetal pathological conditions and methods of prenatal MRI diagnosis are discussed for each organ system, and the available literature is reviewed. Interpretation of findings and potential artifacts are thoroughly considered with numerous high-quality illustrations. In addition, the implications of fetal MRI are explored from the medico-legal and ethical points of view. This book will serve as a detailed resource for radiologists, obstetricians, neonatologists, geneticists, and any practitioner wanting to gain an understanding of fetal MRI technology and applications. In addition, it will provide a reference source for technologists, researchers, students, and those who are implementing a fetal MRI service in their own facility.

This up-to-date textbook comprehensively reviews all aspects of cardiac CT and MRI and demonstrates the value of these techniques in clinical practice. A wide range of applications are considered, including imaging of atherosclerotic and non-atherosclerotic coronary artery disease, coronary revascularization, ischemic heart disease, non-ischemic cardiomyopathy, valvular heart disease, cardiac tumors, and pericardial disease. The numerous high-quality images illustrate how to interpret cardiac CT and MRI correctly for the purposes of diagnosis, treatment planning, and follow-up. Helpful summarizing sections in every chapter will facilitate rapid retrieval of information. This book will be of great value to radiologists and cardiologists seeking a reliable guide to the optimal use of cardiac CT and MRI in real clinical situations. An additional feature is the provision of QR codes allowing internet access to references, further figures, and motion pictures. The reader will be able to enjoy this book using a smartphone or tablet PC.

This book is divided into chapters that cover MRI of all structures of the knee joint in the order that is usually used in practice – cruciate ligaments, collateral ligaments, menisci, cartilage, subchondral bone, patella, synovia, muscles and tendons, arteries, veins and bones. With the aid of numerous images, each chapter provides comprehensive descriptions of the anatomy, the normal MR appearance, pathological MR findings, and postoperative MRI appearance. A text box at the end of each chapter clearly describes how the MRI report should be compiled and what should be included when reporting on specific lesions. The book will be an ideal guide for radiologists and will also be relevant for orthopaedic surgeons, rheumatologists, and physiotherapists.

HANDBOOK OF MRI TECHNIQUE FIFTH EDITION Distinguished educator Catherine Westbrook delivers a comprehensive and intuitive resource for radiologic technologists in this newly revised Fifth Edition of the Handbook of MRI Technique. With a heavy emphasis on patient optimisation and patient care, the book guides the uninitiated through scanning techniques and assists more experienced technologists with quality improvement. The new edition includes up-to-date scanning techniques and an additional chapter on paediatric imaging. The latest regulations on MRI safety are referenced and there are expanded sections on slice prescription criteria. The book also includes the contributions of several clinical experts, walking readers through key theoretical concepts, discussing practical tips on cardiac gating, equipment use, patient care, MRI safety, and contrast media. Step-by-step instruction is provided on scanning each anatomical area, complete with patient positioning and image quality optimisation techniques. The book includes: A thorough introduction to the concepts of parameters and trade-offs, as well as pulse sequences, flow phenomena, and artefacts Comprehensive explorations of cardiac gating and respiratory compensation techniques Patient care and safety, contrast agents, and slice prescription criteria Practical discussions of a wide variety of examination areas, including the head, neck, spine, chest, abdomen, pelvis, the upper and lower limbs, and paediatric imaging A companion website with self-assessment questions and image flashcards Perfect for radiography students and newly qualified practitioners, as well as practitioners preparing for MRI-based certification and examination, the Handbook of MRI Technique will also prove to be an invaluable addition to the libraries of students in biomedical engineering technology and radiology residents.

MRI

An Image Pattern Approach

Magnetic Resonance Imaging

Imaging Procedures, Patient Care, and Safety

A Teaching File Approach

A Case-Based Approach to Interpretation and Reporting

Thoroughly revised and updated with many new illustrations and images, this essential resource provides a comprehensive introduction to MRI, describing the essential concepts in a clear and accessible style. --

An ideal resource for the classroom or the clinical setting, Sectional Anatomy for Imaging Professionals, 3rd Edition provides a comprehensive, easy-to-understand approach to the sectional anatomy of the entire body. Side-by-side presentations of actual diagnostic images from both MRI and CT modalities and corresponding anatomic line drawings illustrate the planes of anatomy most commonly demonstrated by diagnostic imaging. Concise descriptions detail the location and function of the anatomy, and clearly labeled images help you confidently identify anatomic structures during clinical examinations and produce the best possible diagnostic images. Side-by-side presentation of anatomy illustrations and corresponding CT and MRI images clarifies the location and structure of sectional anatomy. More than 1,500 high-quality images detail sectional anatomy for every body plane commonly imaged in the clinical setting. Pathology boxes help you connect commonly encountered pathologies to related anatomy for greater diagnostic accuracy. Anatomy summary tables provide quick access to muscle information, points of origin and insertion, and muscle function for each muscle group. Reference drawings and corresponding scanning planes accompany actual images to help you recognize the correlation between the two. NEW! 150 new scans and 30 new line drawings familiarize you with the latest 3D and vascular

imaging technology. NEW! Chapter objectives help you concentrate on the most important chapter content and study more efficiently. NEW! Full labels on all scans provide greater diagnostic detail at a glance.

Magnetic Resonance Imaging (MRI) is among the most important medical imaging techniques available today. There is an installed base of approximately 15,000 MRI scanners worldwide. Each of these scanners is capable of running many different "pulse sequences", which are governed by physics and engineering principles, and implemented by software programs that control the MRI hardware. To utilize an MRI scanner to the fullest extent, a conceptual understanding of its pulse sequences is crucial. Handbook of MRI Pulse Sequences offers a complete guide that can help the scientists, engineers, clinicians, and technologists in the field of MRI understand and better employ their scanner. Explains pulse sequences, their components, and the associated image reconstruction methods commonly used in MRI Provides self-contained sections for individual techniques Can be used as a quick reference guide or as a resource for deeper study Includes both non-mathematical and mathematical descriptions Contains numerous figures, tables, references, and worked example problems

This practical guide offers an accessible introduction to the principles of MRI physics. Each chapter explains the why and how behind MRI physics. Readers will understand how altering MRI parameters will have many different consequences for image quality and the speed in which images are generated. Practical topics, selected for their value to clinical practice, include progressive changes in key MRI parameters, imaging time, and signal to noise ratio. A wealth of high quality illustrations, complemented by concise text, enables readers to gain a thorough understanding of the subject without requiring prior in-depth knowledge.

In the past few decades, Magnetic Resonance Imaging (MRI) has become an indispensable tool in modern medicine, with MRI systems now available at every major hospital in the developed world. But for all its utility and prevalence, it is much less commonly understood and less readily explained than other common medical imaging techniques. Unlike optical, ultrasonic, X-ray (including CT), and nuclear medicine-based imaging, MRI does not rely primarily on simple transmission and/or reflection of energy, and the highest achievable resolution in MRI is orders of magnitude smaller than the smallest wavelength involved. In this book, MRI will be explained with emphasis on the magnetic fields required, their generation, their concomitant electric fields, the various interactions of all these fields with the subject being imaged, and the implications of these interactions to image quality and patient safety. Classical electromagnetics will be used to describe aspects from the fundamental phenomenon of nuclear precession through signal detection and MRI safety. Simple explanations and Illustrations combined with pertinent equations are designed to help the reader rapidly gain a fundamental understanding and an appreciation of this technology as it is used today, as well as ongoing advances that will increase its value in the future. Numerous references are included to facilitate further study with an emphasis on areas most directly related to electromagnetics.

Electromagnetics in Magnetic Resonance Imaging

MRI in Clinical Practice

MRI from Picture to Proton

***Quantitative MRI of the Spinal Cord
Handbook of MRI Pulse Sequences
Theory and Practice***

Since the first edition was published in 1993, MRI in Practice has become the standard text for radiographers, technologists, radiology residents, radiologists and even sales representatives on the subject of Magnetic Resonance Imaging (MRI). This text is essential reading on undergraduate and postgraduate MRI courses. Furthermore MRI in Practice has come to be known as the number one reference book and study guide in the areas of MR instrumentation, principles, pulse sequences, image acquisition, and imaging parameters for the advanced level examination for MRI offered by the American Registry for Radiologic Technologists (ARRT) in the USA. The book explains in clear terms the theory that underpins magnetic resonance so that the capabilities and operation of MRI systems can be fully appreciated and maximised. This fourth edition captures recent advances, and coverage includes: parallel imaging techniques and new sequences such as balanced gradient echo. Building on the success of the first three editions, the fourth edition has been fully revised and updated. The book now comes with a companion website at www.wiley.com/go/mriinpractice which hosts animated versions of a selection of illustrations in the book that are used on the MRI in Practice Course. These animations and accompanying text are aimed at helping the reader's comprehension of some of the more difficult concepts. The website also hosts over 200 interactive self-assessment exercises to help the reader test their understanding. MRI in Practice features: Full color illustrations Logical presentation of the theory and applications of MRI A new page design A companion website at www.wiley.com/go/mriinpractice featuring interactive multiple choice questions, short answer questions PLUS animations of more complex concepts from the book For more information on the MRI in Practice Course and other learning resources by Westbrook and Talbot, please visit www.mrieducation.com

Tech to Tech Explanations

MRI: The Basics

Totally Accessible MRI

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