Two Amazing Courses for the Price of One

MRI IN PRACTICE ONLINE

HANDBOOK OF MRI TECHNIQUE ONLINE

Dr Catherine Westbrook
Dr John Talbot
Welcome to MRI in Practice – The Course

The book, MRI in Practice is, by far, the World’s best-selling book on MRI imaging. It was first published in 1993 and quickly became the one of the world’s leading MRI resources. Now in its 5th edition, it is considered an essential text for tens of thousands of MRI practitioners around the world. It is used to support learning of MRI theory by practitioners who wish to gain qualifications in MRI, including the MR Registry Review Exam in the USA and on post graduate MRI programmes in countries such as the UK and Australia.

MRI in Practice course is based on this book, it was first delivered in 1992 in Oxford in the UK. It has been continuously presented since then by the authors of MRI in Practice, Dr Catherine Westbrook and Dr John Talbot. Thousands of delegates, from over 20 countries, across 5 continents have attended the MRI in Practice course and it is now considered one of the world’s leading MRI programmes. MRI professionals from across the clinical and research spectrum have attended the MRI in Practice course including radiographers, radiotherapists, radiologists, physicists, veterinarians and engineers.

The popularity of the course is mainly due to state-of-the-art graphics that are purposed to present complex MRI theory in a user-friendly way. Catherine and John combine their extensive experience in MRI and education to uniquely enable delegates to apply MRI theory to their practice. The course also has a well-deserved reputation for its informal approach to learning and has been widely used to enhance the medical imaging curricula of some of the most prestigious universities including those in Oxford, Cambridge, Dublin (Trinity College), Chicago (Rush Medical School), Missouri (Dept of Veterinary Medicine and Surgery) Sharjah (Dept of Medical Diagnostic Imaging) and Qatar.

The MRI in Practice course is now available as an online learning experience.
## Lecture Programme

<table>
<thead>
<tr>
<th>approximate timing</th>
<th>Day 01 FUNDAMENTALS</th>
<th>Day 02 PULSE SEQUENCES</th>
<th>Day 03 SPATIAL ENCODING</th>
<th>Day 04 IMAGE QUALITY</th>
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<tr>
<td>08:30</td>
<td>Join Zoom at 8:15</td>
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<tr>
<td>09:00</td>
<td>Basic Principles</td>
<td>Spin-Echo Sequences</td>
<td>Spatial Encoding Overview</td>
<td>Image Artefacts (Extrinsic)</td>
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<td></td>
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<td>1 hour 34 minutes (Talbot)</td>
<td>1 hour 34 minutes (Talbot)</td>
<td>1 hour 23 Minutes (Talbot)</td>
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<td>(Westbrook)</td>
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<td>12:15</td>
<td>Q&amp;A</td>
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<tr>
<td>13:00</td>
<td>Instrumentation</td>
<td>Gradient-Echo Sequences</td>
<td>k-Space 02 (Data Acquisition &amp; Image Production)</td>
<td>Image Artefacts (Intrinsic)</td>
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<td>2 Hours 3 minutes</td>
<td>1 hour 40 minutes</td>
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<td>15:15</td>
<td>Q&amp;A</td>
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<tr>
<td>15:45</td>
<td>Introduction to MRI Safety</td>
<td>Q&amp;A</td>
<td>k-Space 03 (Non-Cartesian Filling Methods)</td>
<td>Q&amp;A</td>
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<td>Revision</td>
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Please note that the course is accessible to an international audience (some restrictions apply). There will be a time difference according to the time zone from which you are accessing the course. We have a time difference calculator on our [website](#).
MRI in Practice Online

MRI is still a rapidly evolving modality and poses many challenges for the MRI practitioner. An in-depth understanding of theory and how it is applied in clinical practice are necessary to exploit the full potential of the MR system. The MRI in Practice course has always had a reputation for its use of the latest multimedia and presentation technology. We were one of the first MRI courses to use digital data projectors and HD animated graphics to present complex MRI concepts. Delegates value our unique presentation style that combines sophisticated graphics and clear analogies to enable them to easily relate MRI physics to their practice. Protocol parameter manipulation, artefact recognition, appropriate selection of pulse sequences and image interpretation are all easier after attending the MRI in Practice course.

MR professionals are advancing their knowledge of MRI using a variety of resources including online content. With this in mind, we have developed an online version of the MRI in Practice course. The course is still presented by Catherine and John but via all-new video versions of the lectures that can be accessed on your PC, Mac or laptop.

However, MRI in Practice Online is not like other online learning resources where delegates simply view presentations over the internet. Catherine and John have over 20 year’s experience of distance learning delivery of MRI and have used this expertise to add value to your learning experience. The programme is interactive and includes live sessions with the presenters. We use a mobile application to incorporate quizzes, revision and feedback sessions on every day of the course. We are confident that the online version of the MRI in Practice course is even more valuable than the face to face offering and, of course, far more convenient for delegates with no requirement for travel or accommodation costs.

We recognise that everyone has different levels of experience in MRI and different learning needs. For this reason, the course programme is designed to begin with first principles and then each day, progress onto more advanced concepts. Whether you are new to MRI or a seasoned pro, we can guarantee that you will learn a great deal by attending this course.

Take a look at the lecture topics on the following pages.
Day 01: The Fundamentals of MRI

01: BASIC PRINCIPLES
Dr Catherine Westbrook
(duration 00:57)

Primary learning outcome: to become familiar with the fundamental physical principles of MRI:

- Nuclear structure
- MR active nuclei
- Alignment
- Precession and resonance
- Signal generation
- Relaxation processes

02: IMAGE CONTRAST
Dr Catherine Westbrook
(duration 01:08)

Primary learning outcome: to comprehend and evaluate the processes of image contrast generation:

- Contrast definition
- MRI contrast parameters
- TR
- Fat and Water characteristics
- Relaxation
- T1 Recovery
- T1 Recovery time
- T1 Contrast and TR
- T2 Decay
- T2 Decay time
- T2 contrast and TE
- Weighting
- T1 Weighting
- T2 Weighting
- Proton density weighting
- Diffusion Weighting
- Stejskal-Tanner gradient scheme
- Diffusion-weighted images
Day 01: The Fundamentals of MRI

03: INSTRUMENTATION
Dr John Talbot
(duration 01:40)

Primary learning outcome: to identify the components of an MRI scanner and relate them to the functions they provide during patient scanning.

- Cryostat
- Cold head
- Cryogen vent
- Cryogen chamber
- Helium
- Superconductivity
- Solenoids
- Ramping the magnet
- Flux density
- Magnet shielding
- Shim system
- Gradient system
- RF system
- RF transmitter
- RF receiver coils

04: INTRODUCTION TO MRI SAFETY
Dr John Talbot
(duration 01:20)

Primary learning outcome: to recognise the primary risk-areas in MRI and evaluate strategies to reduce the risk to patients and staff.

- Safety Zones
- Primary magnetic field
- Spatial gradient
- Projectiles
- Translational and rotational forces
- Active and passive implants
- Intra-ocular foreign bodies
- Radiofrequency pulses
- Induction effects
- Antenna effect
- Patient heating
- Time-varying gradient magnetic fields
- Peripheral nerve stimulation
- Acoustic noise and hearing protection
- Quench risks
Day 02: Pulse Sequences

05: SPIN-ECHO PULSE SEQUENCES
Dr John Talbot
(duration 01:00)

Primary learning outcome: to become aware of the purpose and mechanism of spin-echo pulse sequences.

- Free induction decay
- The mechanism of the 180 degree rephasing pulse
- Spin-spin dephasing
- T1 vs. T2
- Types of spin-echo sequence
- Conventional spin echo
- Single echo acquisition
- Multiple echo acquisition
- Clinical applications

06: FAST SPIN ECHO & INVERSION RECOVERY SEQUENCES
Dr John Talbot
(duration 01:03)

Primary learning outcome: to become aware of the purpose and mechanism of fast (turbo) spin echo and inversion recovery pulse sequences:

- Fast (Turbo)Spin-Echo, mechanism
- Advantages and trade-offs
- Blurring
- J-coupling
- RF deployment
- Driven Equilibrium Fourier Transform
- Inversion Recovery
- "T1" Weighting at suboptimal field strength
- Short Tau Inversion Recovery
- Fluid Attenuated Inversion Recovery
- Clinical applications
Day 02: Pulse Sequences

07: GRADIENT ECHO PULSE SEQUENCES
Dr Catherine Westbrook
(duration 02:03)

Primary learning outcome: to understand, in depth, the principles that underpin gradient echo pulse sequences

- Flip Angles
- Gradient Mechanism
- Dephasing
- Rephasing
- Weighting Mechanisms
- Extrinsic Parameters
- The Steady State
- Echo generation
- Ernst Angle
- Gradient-Echo Sequence Types
- Gradient Echo Acronyms
- Rewound GE
- Spoiled GE
- Reverse GE
- Balanced GE
- Turbo GE
- Single Shot GE
- Echo-Planar Imaging
- Hybrid Sequences
08: SPATIAL ENCODING OVERVIEW
Dr John Talbot
(duration 01:34)

Primary learning outcome: to recognise the purpose and mechanism of gradient magnetic fields for the purpose of spatial encoding:

- Historic background
- Gradients in spatial encoding
- Gradient functions
- Slice selection
- Slice location
- Slice thickness
- Slice gap
- Field of view
- Phase and frequency
- Sampling waveforms
- Temporal frequencies
- Spatial frequencies
- A novel vector model (Plewes)
- Acquiring an image - phase and frequency encoding
- Relating the data to the image
- Fourier transformation

09: k-SPACE 01 (INTRODUCTION)
Dr Catherine Westbrook
(duration 01:07)

Primary learning outcome: to gain a broad overview of k-space including:

- Revision of gradient mechanisms in pulse sequences
- k-space functions and characteristics
- The Chest of Drawers Analogy
- Cartesian filling of k-space in a basic pulse sequence
- How k-space is used to optimise image quality
Day 03: Spatial Encoding

10: k-SPACE 02 (DATA ACQUISITION IMAGE PRODUCTION)
Dr Catherine Westbrook
(duration 01:40)

Primary learning outcome: to understand, in depth, the principles that underpin data acquisition in MRI:

- Revision of spatial encoding
- Sampling and analogue to digital conversion (ADC)
- The Wheel Analogy
- The Runner on the Track Analogy
- User-friendly Fourier Analysis
- How data points in k-space create MR images
- The receive bandwidth in protocol optimisation
- Advantages and disadvantages of each technique in clinical use

11: k-SPACE 03 (NON-CARTESIAN FILLING METHODS)
Dr Catherine Westbrook
(duration 01:20)

Primary learning outcome: to evaluate non-Cartesian k-space filling techniques including:

- Partial Fourier
- Fast or Turbo spin echo pulse sequences
- Respiratory Ordered Phase Encoding
- Centric k-space filling
- Single and multi-shot
- Radial k-space filling
- How k-space determines image geometry
- Parallel and compressed imaging
12: IMAGE ARTEFACTS (EXTRINSIC)
Dr John Talbot
(duration 01:23)

Primary learning outcome: to identify, and provide remedies for MRI image artefacts that arise due to factors external to the patient.

- Aliasing
- Array Processor Error
- Cross-Excitation
- Damaged Coils
- Extraneous RF
- Field Inhomogeneity
- Magnetic Susceptibility
- Moiré Fringing
- Noise Spike
- Nyquist Ghost
- Standing Wave
- Truncation
- Zipper

13: PROTOCOL OPTIMISATION
Dr Catherine Westbrook
(duration 01:03)

Primary learning outcome: to understand the interrelationship between protocol parameters in the optimisation of image quality:

- What is meant by a protocol.
- Balancing image quality and scan time
- Signal to noise ratio.
- Field Strength.
- Coil choice.
- Coil position.
- Time to Repeat.
- Time to Echo.
- Flip angle
- Number of signal averages.
- Receive bandwidth.
- Contrast to noise ratio.
- Spatial resolution
- Voxel volume
- Scan time.
- Phase matrix.
- Trade-offs
14: IMAGE ARTEFACTS (INTRINSIC)
Dr John Talbot
(duration 01:06)

Primary learning outcome: to identify, and provide remedies for MRI image artefacts that arise due to factors relating to the anatomy and physiology of the patient.

- Chemical Shift
- Magic Angle
- Out of Phase Signal Loss
- Phase Mis-mapping

15: FLOW AND MRA
Dr John Talbot
(duration 01:06)

Primary learning outcome: to become aware of the complex relationship between the factors affecting the signal emitted by flowing blood.

- Flow Phenomena
- Entry Slice Phenomenon
- Time of Flight
- Black-Blood Imaging
- Maximum Intensity Projection
- Ray Tracing
- In-Plane Flow
- Plug Flow
- Laminar Flow
- Gradient Moment Nulling
- Turbulent Flow
- Stenotic Flow
- Flow-Dependent MRA
- Inflow Angiograms 2D
- Inflow Angiograms 3D
- Ramped RF
- Multiple Overlapping Thin Slab Acquisition (MOTSA)
- Phase Contrast Angiography
- ECG-Gated 3D Fast Spin Echo
MRI in Practice Online - Participant Requirements

To fully benefit from this course all of the following requirements must be met:

- Uninterrupted days for study for the duration of the daily programme (for example 8:00 am to 5:00 pm). Treat the attendance requirements as though you were participating in a face-to-face course. Access must be from a domestic location (your home address), access from educational institutions, hospitals and commercial premises is prohibited. There are no exceptions to this requirement.

- You must reside in one the geographical areas where the course is available. See our website for full details.

- You must use the latest version of any of the following browsers, Google Chrome, Microsoft Edge, Mozilla Firefox. Other browsers may or may not be compatible.

- A reasonably fast and stable broadband connection - the online lectures are streamed and contain many high resolution graphics and animations. The lectures are set to automatically display at the highest quality that your internet connection speed will allow. The quality may be adversely affected if other family members are on-line at the same time, especially if they are accessing streaming content such as Netflix.

- Headphones, or suitable audio, and a microphone on your device. There are regular meetings with the presenters and other delegates during the course and you will be encouraged to actively participate.

- A webcam on your device. For copyright protection and to monitor access for CPD purposes, it is necessary to have your web cam switched on during all lectures and interactive sessions with the presenters. Lecture access will only be provided if you are on camera at all times.

- A second device such as a smartphone or tablet is strongly recommended. We run quizzes, revision sessions and Q and A sessions via a web app. The lectures can be accessed from a Mac, PC or laptop but having the Zoom app on a second device makes these sessions a little easier to manage. Older PCs and laptops may struggle to display both the lectures and the Zoom meeting simultaneously, in which case a tablet is an ideal way to access the Zoom meeting whilst watching the lectures on your PC. It must have a camera (see above).

- A copy of the 5th edition of MRI In Practice - as the 5th edition of the book is the course notes. No other supporting material is provided. The book is often referred to in the online lectures and it is therefore necessary to have a copy at hand throughout the course. The book can be obtained here.

As part of the online course terms and conditions you agree not to film, photograph or otherwise capture the screen content during the lectures or permit access to any other individuals such as colleagues. The course fee allows access by the single applicant only. Our software uses screen-grab detection and digital watermarking that personally identifies the participant and embeds the geolocation data directly onto the video stream. Any participants who are found to have used screen-grabbing or any other form of prohibited copying of the lecture materials will be banned from course. Legal action will be taken against any individual who copies and shares content from the course either via digital networks, on-line or via any other media. Such participants will also be reported to their professional body and employer. We take intellectual property theft very seriously because our books are shared as illegal downloads and piracy costs us our livelihood.
We have just collated the delegate feedback and your presentations averaged 98 out of 100 - thank you for the great job you have done over the four days. (Bucharest Course Hosts)

As a teacher myself, the thing that I have learned is that in MRI education we need genuine experts to teach it, because this fascinating modality deserves nothing less. For my part your job is safe for the foreseeable future! Many thanks.

"I am a MSK radiologist. This is not just the best MRI course I have been on - it is the best course I have ever attended. Your graphics were so clever and the presentations were fantastic." (Oslo Course)

Excellent lectures, I loved the use of analogies to explain complex processes - especially in the spatial encoding lecture.

Incredible lecture series, and truthfully one of the most rewarding academic experiences in my adult life. The graphics are as astounding as the ease at which Dr. Talbot and Dr. Westbrook navigate the physics of MRI. Truly brilliant! Thank you. (Chicago participant 2019)

A colleague told me that the animated graphics would change my life, I was sceptical but I now feel the same way.

The results from electronic evaluation of the course are fantastic! An average score of 5-6 on a scale to 6. Congratulations, you charmed us all!

I am a Radiologist this is my 3rd or 4th attendance and the course keeps getting better and better. Highly recommended. (Sydney 2017)

In addition to competent teaching you have a real gift for developing witty and animated graphics. Your work is absolutely exceptional - the resource you have developed is better by far than anything I have come across before.

I thought the course was brilliant, all topics were covered and explained very well. I will definitely recommend this course to others.
We collect anonymous feedback via Mentimeter for every course. These statistics are from online courses run over the last 12 months.

### Course Delivery

<table>
<thead>
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<th>Category</th>
<th>Rating</th>
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<td>Lecturer Knowledge</td>
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<td>Lecture Content</td>
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<td>Presentation Graphics</td>
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<td>Q and A Sessions</td>
<td>91/100</td>
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<td>Convenience of Online Delivery</td>
<td>90/100</td>
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Our recent course participants described the experience as being...
The latest edition to our course portfolio is a clinical MRI course based on our book Handbook of MRI Technique. This is the World’s best-selling MRI Technique book and covers all you need to know about the clinical practice of MRI scanning, patient care and patient positioning in MRI.

As professional educators, Cathy and John have been running courses both in the classroom and online since 1992. Over the years, participants have commented that they would like some clinical technique included. We have always thought this to be a tricky thing to offer because scanners are all different, use different terminology, different acronyms, offer different techniques, have different field-strengths and radiologists all have their own preferences when it comes down to protocols. It would also have made the course at least two days longer, and when study leave is tight a 5 day course may not be practicable.

In 2020 we completely redesigned and updated the MRI in Practice course and as part of that process we realised that all manner of additional content could be included that participants could access at their leisure. The following year saw the publication of the new 5th edition of The Handbook of MRI Technique and we realised that we could use the book as a template for a new course. Because the Handbook content is offered as on-demand lectures, participants gain all of the additional teaching at a time that suits them. There is no requirement to take further study leave, and much of the content also contains essential revision materials for the MRI in Practice course. Best of all, we are currently including the entire Handbook course free of charge! Everyone who applies for the MRI in Practice course gets access to everything covered in this brochure.

Take a look at the lecture topics on the following pages.
01: THE FUNDAMENTALS OF MRI  
Dr John Talbot  
(duraton 00:32)

- Introduction
- Magnetism
- Flux Density
- Field Homogeneity
- Hydrogen
- Alignment
- Energy States
- Net Magnetic Vector
- Precession
- Larmor Frequency
- Reso1ance
- Radiofrequency Transmitter Coil
- Receiver Coil
- Electromagnetic Radiation
- Coherent Transverse Magnetisation
- Signal Detection
- Image Production
- Slice Selection
- Gradient System
- Slice-Selective Excitation
- Slice Position
- Slice Thickness (Transmit Bandwidth)
- Fast Fourier Transform
- Frequency Encoding
- Sampling
- Spatial Frequencies
- Phase Encoding
- Summary

04: PROTOCOL PARAMETERS AND TRADEOFFS  
Dr John Talbot  
(duraton 00:42)

- Introduction
- Signal to Noise Ratio (Defined)
- SNR Factors
- SNR vs TR
- SNR vs Flip Angle
- SNR vs TE
- SNR vs Receiver Coil
- SNR vs Matrix
- SNR vs Field of View
- SNR vs Slice Thickness
- SNR vs Receiver Bandwidth
- SNR vs Number of Signal Averages (NSA) (NEX) (NAq)
- Contrast to Noise Ratio (Defined)
- CNR and Anatomy
- CNR and Fat Saturation
- CNR and Pathology
- CNR and Exogenous Contrast Media (Gadolinium)
- Spatial Resolution (Defined)
- Spatial Resolution vs Matrix
- Spatial Resolution vs Frequency Matrix
- Spatial Resolution vs Phase Matrix and Rectangular FOV
- Scan Acquisition Time
- Scan Time vs Pulse Sequence Parameters
- Summary
03: PULSE SEQUENCES AND IMAGE CONTRAST
Dr John Talbot
(duration 00:44)

- Introduction
- Conventional Spin Echo
- The Spin Echo
- Time to Echo (TE)
- Time to Repeat (TR)
- TR and Image Contrast
- T1 weighting
- Proton Density Weighting
- TE and Image Contrast
- T2 Weighting
- PD Weighting
- Fast (Turbo) Spin Echo
- Effective TE
- FSE Summary
- Inversion Recovery Sequences
- Short Tau Inversion Recovery (STIR)
- Fluid-Attenuated Inversion Recovery (FLAIR)
- Inversion Recovery Summary
- Gradient Echo
- The Steady State
- Rewound (Coherent) Gradient Echo
- Balanced Gradient Echo
- Spoiled Gradient Echo
- Gradient Echo Summary
- Summary

04: AN A-Z OF MRI IMAGE ARTEFACTS
Dr John Talbot
(duration 00:26)

- Introduction
- Array Processor Error
- Blurring (Fast Spin Echo)
- Cross Excitation/Crosstalk
- Dielectric Effect (Standing Wave Artefact)
- Entry Slice Phenomenon
- Fat/Water Shift (Chemical Shift)
- Ghosting (Phase Mis-mapping)
- High-Velocity Signal Loss
- Inhomogeneity of $B_0$
- J-Coupling
- k-Space Filling Error
- Laminar Flow
- Magic Angle
- Noise Spike
- Out-of-Phase Signal Cancellation
- Plug Flow
- Quadrature Ghost
- RF Leak
- Susceptibility
- Turbulent Flow
- Undersampling (Truncation, Gibbs Artefact)
- Venetian Blind Artefact
- Wrap (Aliasing)
- X Gradient Malfunction
- Y Gradient Malfunction
- Zipper
05: MRI SAFETY AND PATIENT CARE
Dr John Talbot
(duration 00:40)

- Introduction
- Patient Screening
- Claustrophobia and Anxiety
- Patient comfort and immobilisation
- MRI Safety
- Safety zones
- Adverse events in MRI
- Pulsed electromagnetic field
- The electromagnetic spectrum
- The induction effect and patient heating
- SAR and scanning modes
- The antenna effect and implant heating
- The spatially-varying field
- Projectiles
- Passive implants (aneurysm clips)
- Intra-ocular foreign bodies
- Time-varying (gradient) fields
- Induction effects (peripheral nerve stimulation)
- Acoustic noise and hearing damage
- Summary

06: MRI OF THE BRAIN
Dr Catherine Westbrook
(duration 00:32)

- The Brain - Introduction
- Anatomical Landmarks
- Common Indications
- Equipment
- Patient Positioning
- Patient Care
- Slice Prescription
- Protocols
- Contrast Agents
- Protocol Modifications
- Internal Auditory Meati (IAM)
- IAM Slice Prescription
- IAM Protocols
- Pituitary Fossa
- Pituitary Slice Prescription
- Pituitary Protocols
- Pituitary Examples
- Orbits
- Orbits Patient Positioning
- Orbits Slice Prescription
- Orbits Protocols
- Orbits Examples
- Vascular Imaging
- Vascular Imaging Slice Prescription
- Vascular Imaging Examples
- Image Quality Considerations
- Common Artefacts
- Summary
07: MRI OF THE SPINE
Dr Catherine Westbrook
(duration 00:29)
- The Spine - Introduction
- Anatomical Landmarks
- Equipment
- Patient Care
- Common Indications
- Patient Positioning
- Protocols - Introduction
- Slice Prescription - Cervical Spine
- Slice Prescription - Thoracic Spine
- Slice Prescription - Lumbar Spine
- Pulse Sequences Used
- Contrast Agents - Examples
- Protocol Optimisation
- Common Artefacts
- Summary

08: MRI OF THE BODY
Dr Catherine Westbrook
(duration 00:32)
- Body MRI - Introduction
- The Liver
- Liver Anatomy
- Indications for MRI of the Liver
- Equipment
- Patient Care/Positioning/Slice prescription
- Liver Protocols
- Contrast Agents and pathology examples
- Image Optimisation
- The Breast
- Breast Anatomy
- Indications for MRI of the Breast
- Equipment
- Patient Care/Positioning/Slice prescription
- Breast Protocols
- Pathology Example
- Breast Implants
- Image Optimisation
- The Prostate Gland
- Prostate Anatomy
- Indications for MRI of the Prostate
- Equipment
- Patient Care/Positioning/Slice prescription
- Slice Prescription
- Prostate Protocols
- Pathology Example
- Image Optimisation
- Summary
09: MRI OF THE UPPER LIMB  
Dr Catherine Westbrook  
(duration 00:30)

- The Upper Limb - Introduction  
  - The Shoulder  
    - Shoulder Anatomy  
    - Indications for MRI of the Shoulder  
    - Equipment  
    - Patient Positioning/Care/Slice Prescription  
    - Shoulder Protocols  
    - Contrast Agents and pathology example  
  - The Elbow  
    - Elbow Anatomy  
    - Indications for MRI of the Elbow  
    - Equipment  
    - Patient Positioning/Care/Slice Prescription  
    - Elbow Protocols  
    - Pathology Examples  
    - Contrast Agents  
  - The Wrist  
    - Wrist Anatomy  
    - Indications for MRI of the Wrist  
    - Equipment  
    - Patient Positioning/Care/Slice Prescription  
    - Wrist Protocols  
    - Pathology Example  
    - Protocol Optimisation in Upper Limb MRI  
    - Common Artefacts  
    - Conclusion

10: MRI OF THE LOWER LIMB  
Dr Catherine Westbrook  
(duration 00:36)

- The Lower Limb - Introduction  
  - The Hips  
    - Hip Anatomy  
    - Indications for MRI of the Hips  
    - Equipment  
    - Patient Positioning/Care/Slice Prescription  
    - Hip Protocols  
    - Contrast Agents  
  - The Knee  
    - Knee Anatomy  
    - Indications for MRI of the Knee  
    - Equipment  
    - Patient Positioning/Care/Slice Prescription  
    - Knee Protocols  
    - Pathology Examples  
    - Contrast Agents  
  - The Ankle  
    - Ankle Anatomy  
    - Indications for MRI of the Ankle  
    - Equipment  
    - Patient Positioning/Care/Slice Prescription  
    - Ankle Protocols  
    - Ankle Pathology Example  
    - Protocol Optimisation in Lower Limb MRI  
    - Common Artefacts  
    - Conclusion
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Why Choose Our Course?

If you are trying to decide between MRI in Practice and another course, you will want to make a sound, evidence-based decision. Please print out this quick summary to see how we compare to other courses on the following important points:

The Course - MRI in Practice has been running continuously for over 30 years (formerly known as the Oxford MRI Course) and has been taught in 22 countries across 5 continents. We have presented in the UK since 1992, mainland Europe since 2005 and Australia since 2004. We engage and educate hundreds of delegates per year, and their feedback sheets consistently rate our lectures as being excellent. Unlike many other MRI courses, MRI in Practice is completely independent of any private “learning” company or institution. This is most important, because we can guarantee that our delivery is unbiased and we are free to say what we want to say.

The Cost - The online course is very expensive to create, run and maintain, however, we are able to offer it at a substantial discount. As a delegate, the biggest cost saving will be the fact that there is no necessity for travel or accommodation. As a result it is likely that you will save approximately £400-£500 on the overall cost of attending a live course. Taking inflation into account our course is less than half the price it was in the year 2000.

The Content - MRI in Practice Online is based on the World’s best-selling MRI book*. MRI in Practice is consistently at the top of its league on the Amazon.com bookstore and overwhelmingly attracts five-star reviews from the public, which for us, are the ones that count. MRI in Practice is famed as the reference text for practitioners taking the US registry exam - so you can rest assured that our course content is tried, trusted and relevant. You don’t have to take our word for it though - this course has been accredited/endorsed by The UK College of Radiographers (CPD NOW), The British Institute of Radiology, Trinity College Dublin, The Australian Society of Medical Imaging and Radiation Therapy, The Royal Australia and New Zealand College of Radiologists, The University of Sharjah (Emirates), The American Society of Radiologic Technologists and many other respected institutions.

The Presentation - MRI in Practice has evolved over the years, always taking advantage of the very latest technology. We were using data projection before anyone else (as long ago as 1997), and our computer graphics have also developed in line with broadcast production values. The online course is a perfect showcase for this. Delegates repeatedly tell us that our 3D graphics help to clarify difficult concepts, by bringing them to life in a way that a conventional book or PowerPoint lecture can never achieve. Our presentation feedback score (collected anonymously at the end of each course) is, at the time of writing, 95% excellence rating across all international courses.

The Presenters - Some courses rely on the good-will of amateur external speakers, so the quality can vary from course-to-course. MRI in Practice is consistently presented by authors Dr Catherine Westbrook and Dr John Talbot. We firmly believe that radiographers should be taught by radiographers; it seems obvious, we speak the same language, and can apply the basic principles to the real world of scanning and patient care. It goes without saying that the presenters should know their subject, Cathy and John are both clinical MRI specialists, but are also both educated in MRI to Masters level. It is (understandably) essential that course presenters should be qualified in teaching and learning. As academics, Cathy and John have formal post-graduate qualifications in teaching and learning, both have supervised students to Masters or Doctoral level and both hold Doctorates in education. We do not believe that any other course of this kind has a more highly-qualified faculty for presenting MRI education.

If you are considering attending a course run by anybody else, we recommend that you check that the entire faculty are qualified to the level described above, otherwise it is highly unlikely that they are qualified to be selling educational services, or creating and presenting educational materials. There are MRI courses currently offered in the UK and on-line by providers who literally have no qualifications in MRI or in education.
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* Statements relating to the popularity of the books MRI in Practice and Handbook of MRI Technique are based on sales figures from Amazon.com.

MRI in Practice is an eco-conscious course, we always seek to offset our carbon footprint and would encourage you not to print this brochure, but to share it electronically with anyone you feel might be interested.