
PHILIPS
Magnetic Resonance
Extending the power of MR
Clinical applications portfolio

Extending the **power of MR**

We believe MR has potential to touch more lives and make an even bigger difference than it does today. Philips clinical applications support a broad range of anatomies, designed to help make MR more accessible[1], more definitive[2], and more impactful. Underpinned by the latest image acquisition and visualization technologies, these applications can help you answer complex diagnostic questions, enhance speed and reduce variability.

1 Accessible is defined as features that are expected to contribute to speed, consistency, user or patient friendliness
2 Definitive is defined as features that are expected to deliver alternative contrasts, functional or quantitative images

Neuro
Unlock new territories in advanced neurofunctional applications, and perform standardized, contrast-free exams for consistent results.

Neuro 3

Spine
Featuring fat suppression, metal artifact reduction, motion correction and more to help you simplify routine exams.

Spine 16

MSK
With dedicated applications for artifact reduction, and solutions for patients with implants, the MSK portfolio helps you to find answers to your most challenging MSK cases.

MSK 24

Body
Include support for non-invasive assessment of tissue structure and answer the increasing need for motion free imaging.

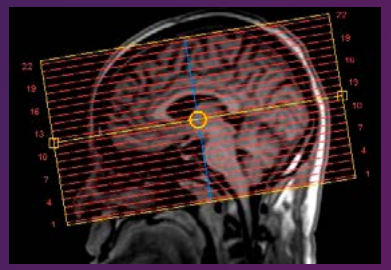
Abdomen 31
Pelvis 37
Breast 42
Whole Body 47

Cardiovascular
Fast, robust cardiac imaging and visualization to help you diagnose your patients.

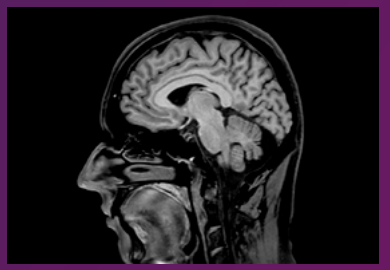
Cardiovascular 51

Our **Neuro** applications

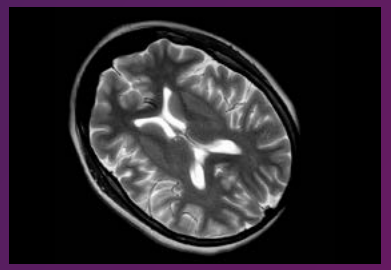
Neurological disorders represent a heavy burden in today's society. Leveraging our dStream digital platform, Philips imaging and visualization strategies for neurology may empower you to resolve complex issues with more confidence. These clinical tools can help you unlock new territories in advanced neurofunctional applications, and perform standardized, contrast-free exams for consistent results. Designed to deliver clarity and treatment guidance, the rich portfolio helps you address growing demands in neuro imaging.



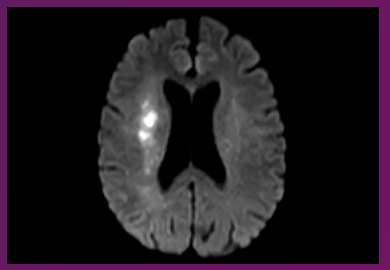
SmartExam Brain Page 5
Standardized exams for consistent MRI results



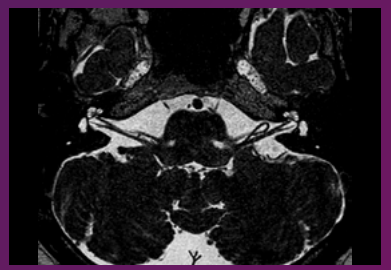
3D BrainVIEW Page 6
View your 3D TSE imaging data in any plane



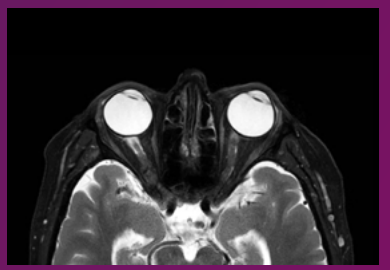
MultiVane XD Page 7
Motion-free imaging in short scan time



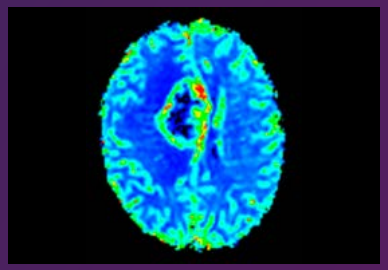
Diffusion
Non-invasive assessment of tissue structure



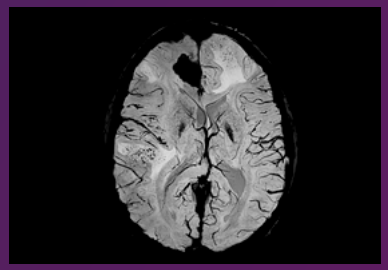
3D DRIVE
Short scan time, brighter fluid



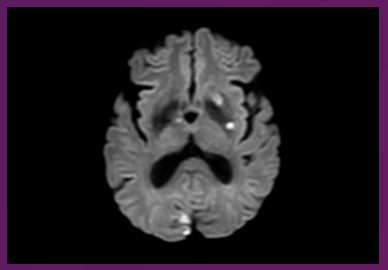
mDIXON XD TSE Page 8
Replace all your FatSat by one single fat-free imaging solution



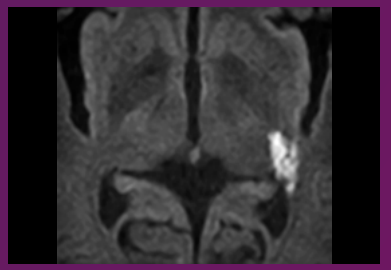
Perfusion
T2* perfusion imaging in short scan times



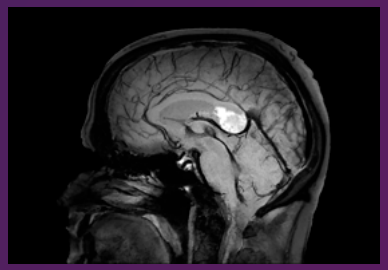
SWIp Page 9
Exquisite susceptibility contrast



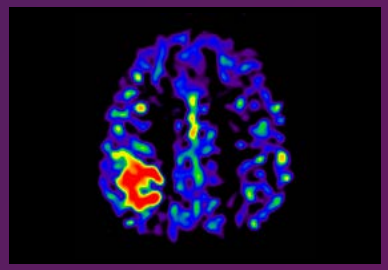
DWI TSE
Diffusion imaging with reduced distortion



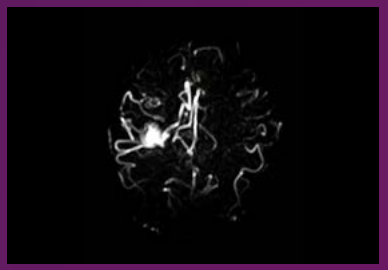
Zoom Diffusion Page 10
Small FOV diffusion imaging for improved image quality



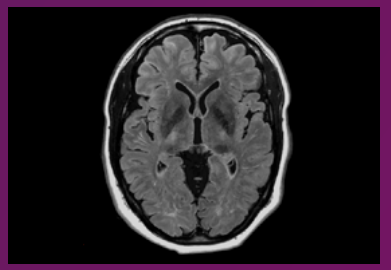
Black Blood imaging Page 11
Enhance your diagnostic confidence for Brain imaging



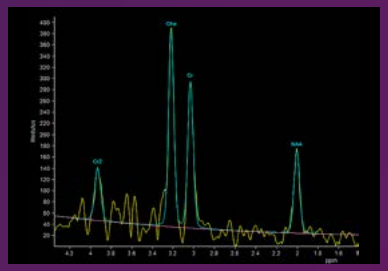
3D ASL Page 12
Reproducible contrast-free brain perfusion



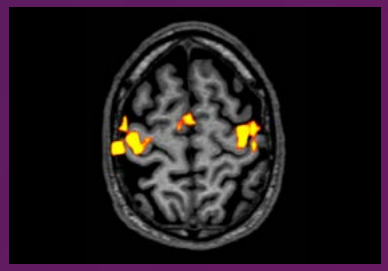
4D-TRANCE Page 13
Contrast-free imaging of brain vascular anatomy



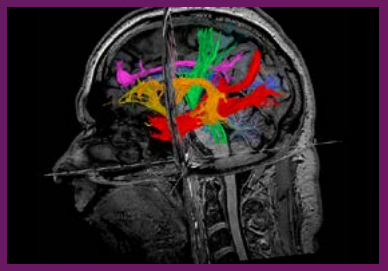
SyntAc Page 14
Exploring neuro-radiology with synthetic MR imaging



Spectroscopy
Comprehensive set of proton spectroscopy acquisition methods

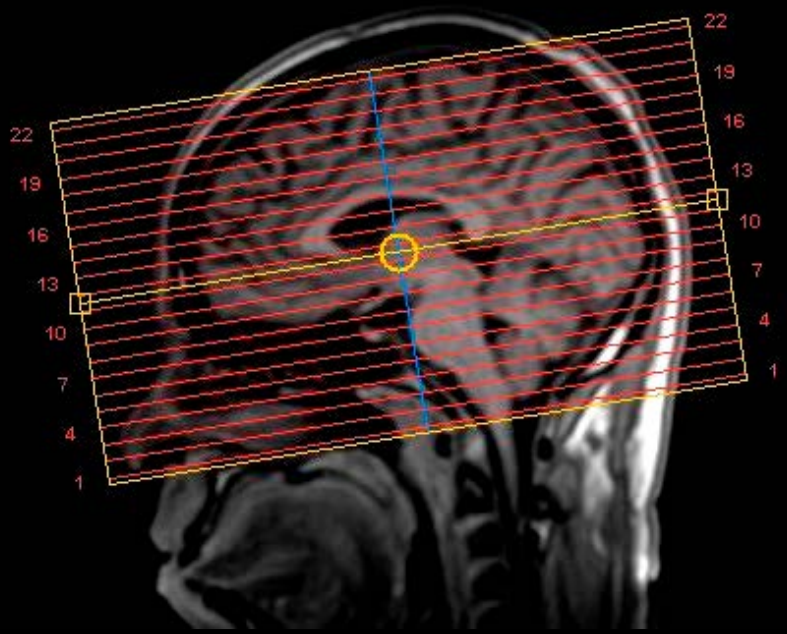


BOLD
Real-time processing of your fMRI activation maps



DTI FiberTrak
Fast and easy assessment of fiber tracts in the brain

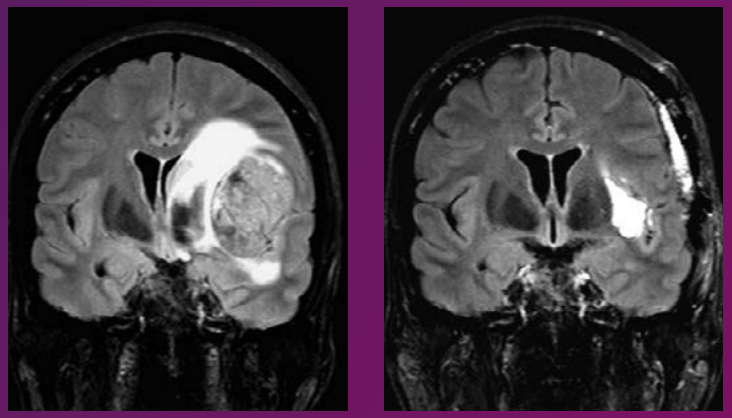
MultiBand SENSE Page 15
High acceleration for your fMRI and DTI sequences



SmartExam Brain

Standardized exams for consistent MRI results

SmartExam[1] Brain assists in delivering reproducible planning results in more than 80% of procedures by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



Enhanced consistency in follow-up exams

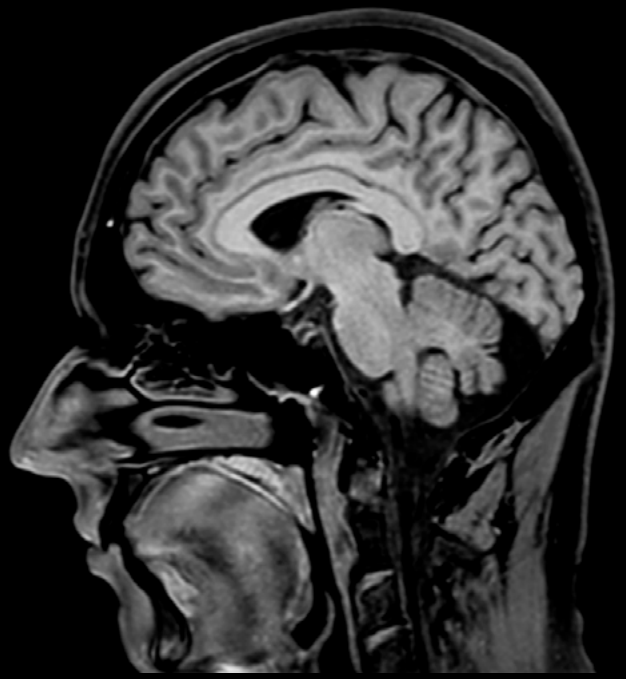
Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

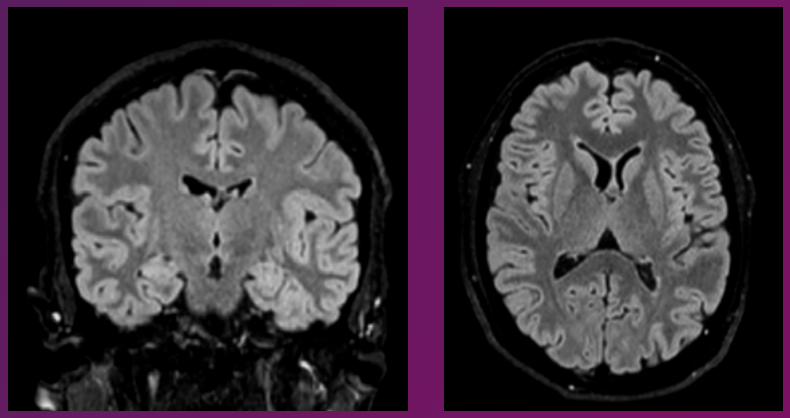
1 SmartExam is not available to patients with MR Conditional implants.

3D BrainVIEW

View your 3D TSE imaging data in any plane



3D BrainVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.

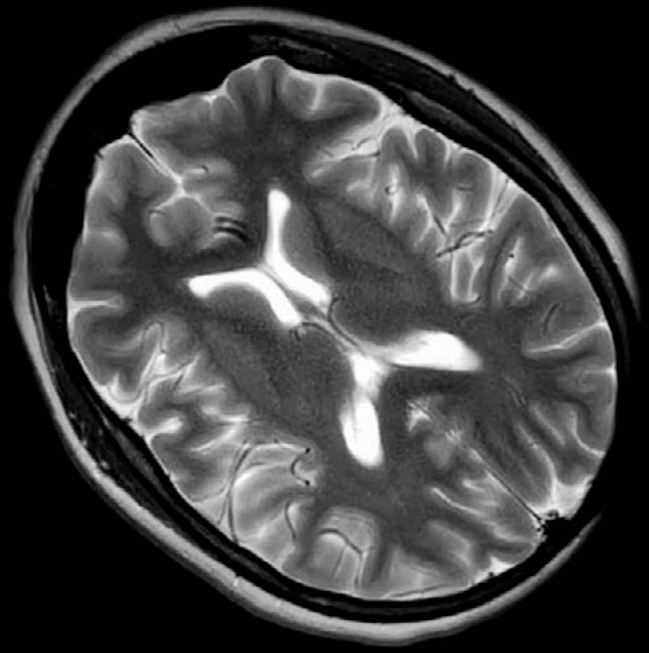


Data in multiple directions, in one scan

Additional information:

- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times[1].
- Available for a range of contrasts (T1w, T2w and PDw).

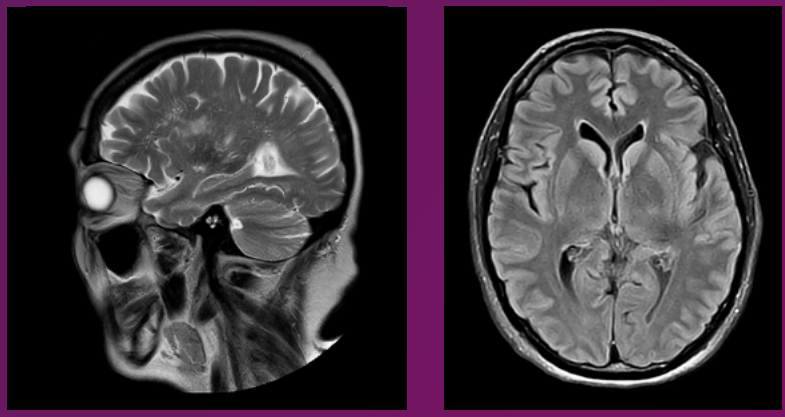
1 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.



MultiVane XD

Motion-free imaging in short scan time

MultiVane XD delivers high resolution diagnostic images even in the case of severe patient motion by providing motion correction to a full range of anatomies, in short scan times[1]. MultiVane XD works in multiple orientations and for various contrasts (T1w, T2w, FLAIR) helping you to increase your diagnostic confidence.

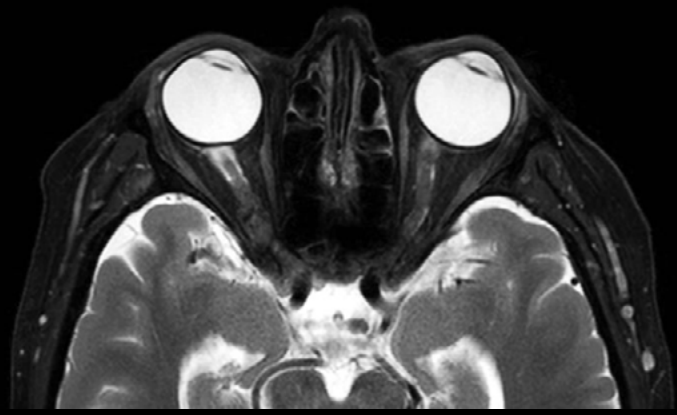


Diagnostic images, even in the case of severe patient motion

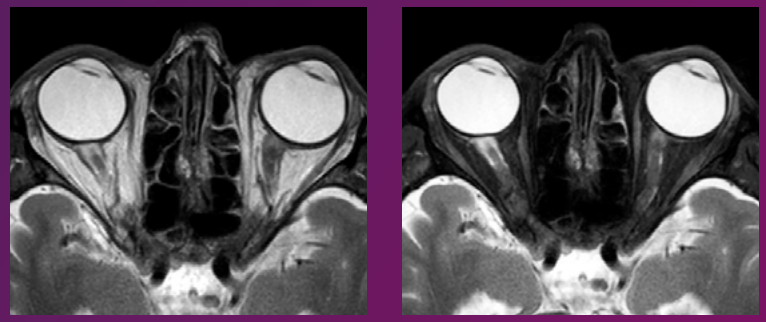
1 Compared to Multivane, thanks to compatibility with dS SENSE.

mDIXON XD TSE

Replace all your FatSat by one single fat-free imaging solution



mDIXON XD TSE brings a new dimension to fat suppression by providing uniform, complete and consistent fat-free imaging, even over large field-of-views and in challenging anatomies. Providing up to four image types in one single scan, including with/without fat suppression contrasts, in routine scan times and resolution simultaneously, you can easily replace your favorite routine TSE scans with it. mDIXON XD TSE will enable you to enhance your imaging strategies by simplifying your routine TSE procedures.



With/without fat suppression contrasts, simultaneously

Additional information:

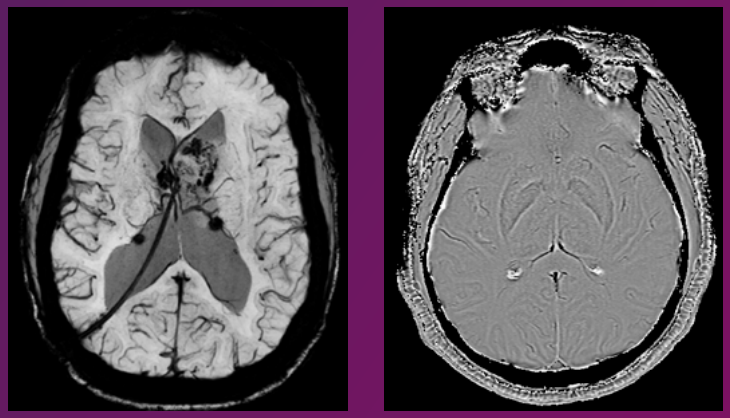
- 30% faster scanning and up to 30% reduced blurring[1].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

1 Due to its unique 2-echo technology, compared to the conventional 3-echo DIXON TSE techniques.
2 Compared to a standard non-fat-shift corrected fat-free TSE approach.

SWIp

Exquisite susceptibility contrast

SWIp has a high sensitivity to enhance contrast for deoxygenated (venous) blood or calcium deposits and may help you, when used in combination with other clinical information, in the diagnosis of various neurological pathologies. SWIp offers high resolution 3D susceptibility weighted brain imaging allowing you to easily integrate it into your mainstream practice.



3D susceptibility weighted brain imaging, including phase maps

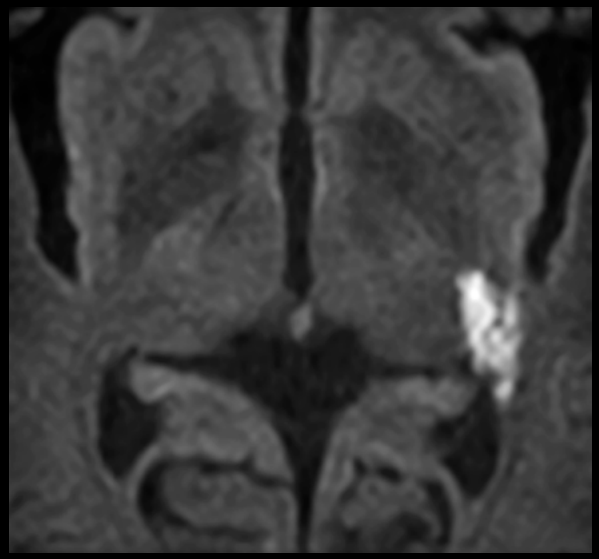
Additional information:

- High signal-to-noise ratio[1].
- Includes detailed phase maps to support advanced diagnosis.

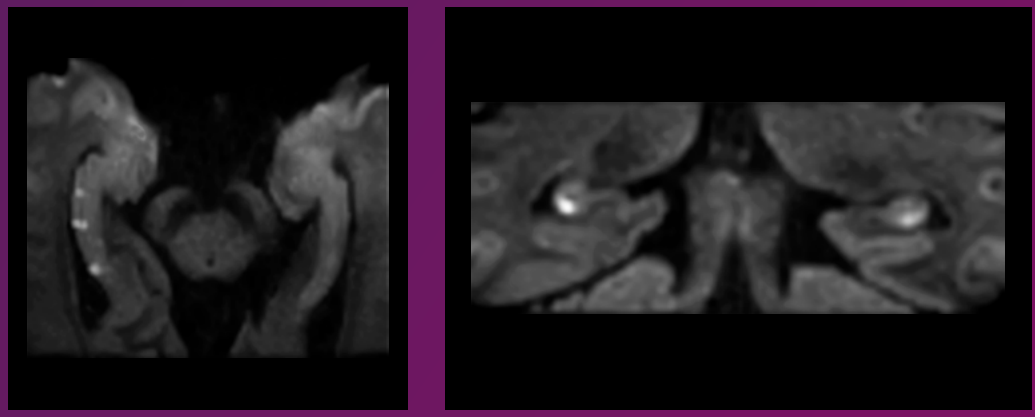
1 Due to multi-echo approach.

Zoom Diffusion

Small FOV diffusion imaging for improved image quality



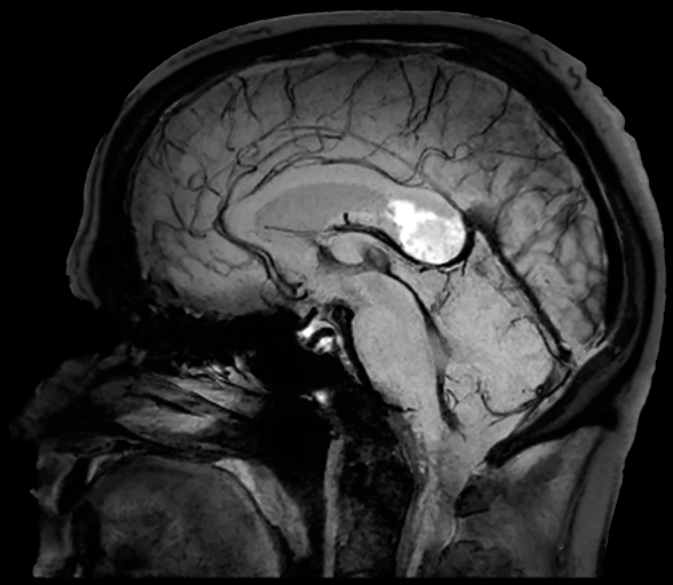
Zoom Diffusion allows you to acquire small FOV imaging, down to 200 x 50 mm, with reduced geometrical distortion, due to reduced EPI echo train length in DWI-EPI compared to conventional full FOV DWI-EPI, and higher spatial resolution, due to smaller acquisition voxel size compared to full FOV DWI-EPI, with same level of geometrical distortion.



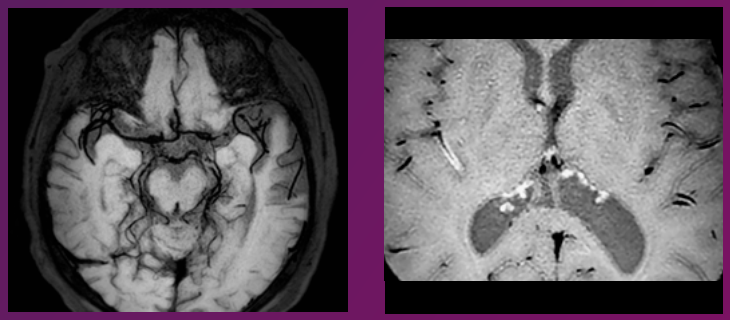
Small FOV diffusion imaging with high spatial resolution

Black Blood imaging

Enhance your diagnostic confidence for Brain imaging



Black Blood imaging helps you better differentiate the vessel lumen from the intra lumen blood signal. This enhances your diagnostic confidence by performing your 3D brain imaging with higher and isotropic imaging resolution[1] with a reduction of the intra-lumen brain blood signal[2] over the complete imaging volume.



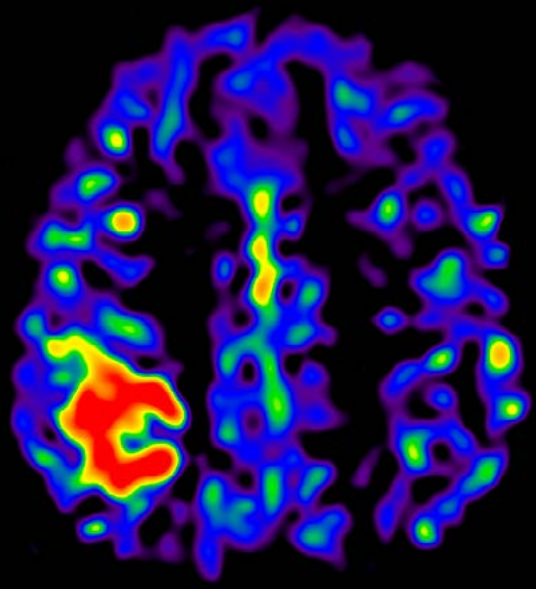
Reduction of the intra-lumen brain blood signal

Additional information:

- Fast scan times[3] of five minutes.
- 3D isotropic acquisition enables reformats in any plane (including oblique) without loss of resolution.

1 Compared to our 2D double inversion methods with same brain coverage and scan time.
2 Compared to our 3D T1w scan without MSDE pre-pulse.

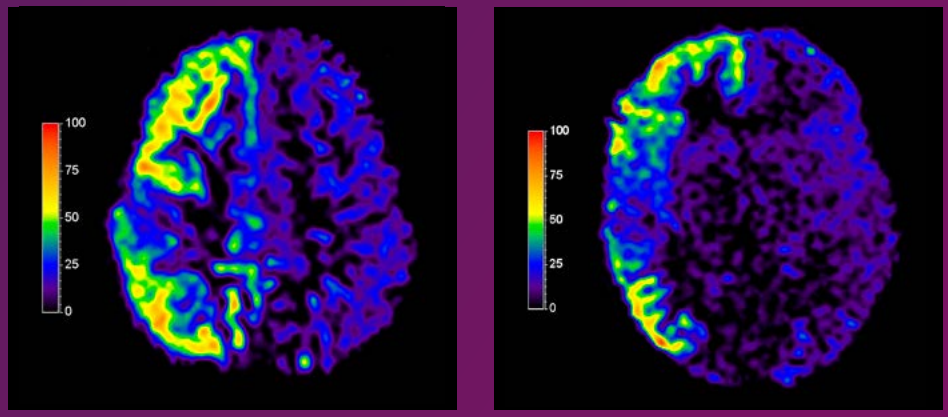
3 Compared to our 2D double inversion recovery methods with same full brain coverage.



3D ASL

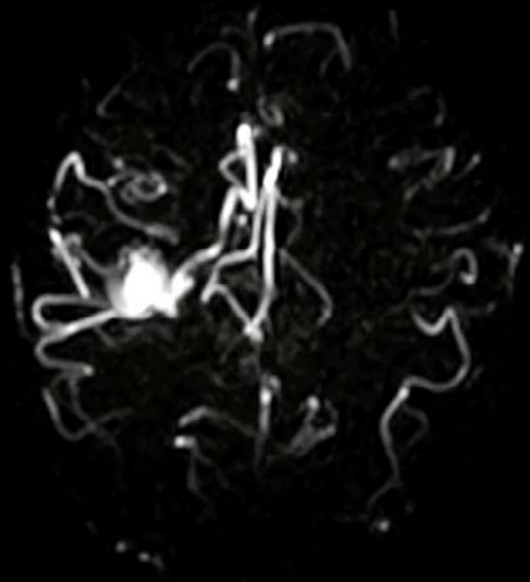
Reproducible contrast-free brain perfusion

3D ASL enables you to consistently quantify brain perfusion with an accuracy of 15%[1] in a non-contrast manner with full brain coverage, and better background suppression, compared to 2D pCASL method. 3D ASL includes fully automated calculation of color coded ASL maps.



Quantification of brain perfusion in a non-contrast manner

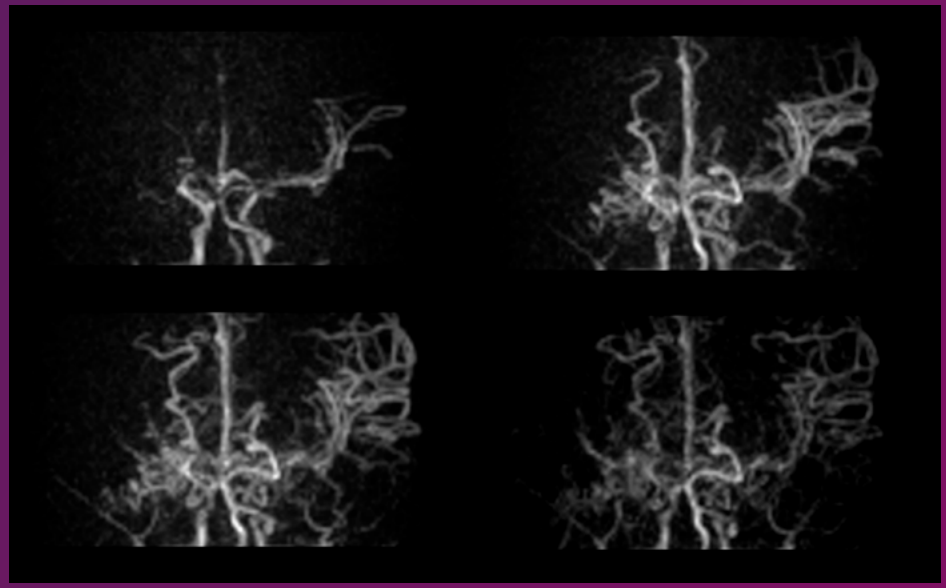
1 Measured on a single Philips 3.0T system for the same volunteer.



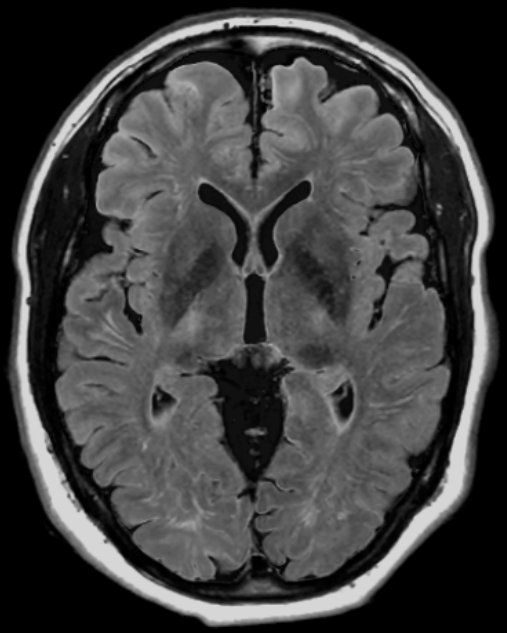
4D-TRANCE

Contrast-free imaging of brain vascular anatomy

4D-TRANCE is a time-resolved technique for non-contrast angiography, promoting patient comfort and enabling you to evaluate the patency of the vascular anatomy in the brain using endogenous contrast with MIP visualization of multiple phases. 4D-TRANCE enables high temporal resolution down to 160 msec.



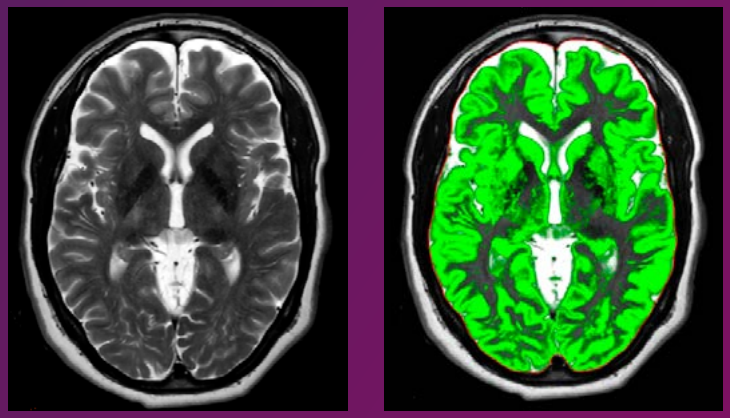
Non-contrast time-resolved angiography of the brain



SyntAc

Exploring neuro-radiology with synthetic MR imaging

SyntAc allows you to perform MR imaging with a single quantification scan of which the resulting data can be used as input for advanced 3rd party processing software[1] to synthesize MR images with different contrasts, brain parenchyma fraction maps and/or brain segmentation maps.

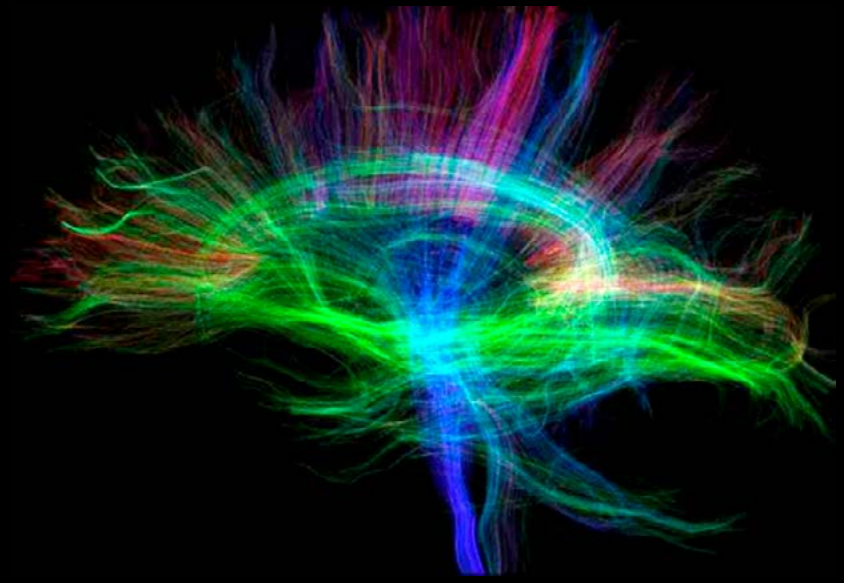


Synthesize MR images and parenchyma maps

Additional information:

- Advanced MR acquisition scheme.
- Synthesize T2w, T1w and FLAIR MR images.
- Automatic calculation of brain parenchyma fraction maps.
- Automatic segmentation of brain tissue (grey matter, white matter, CSF).

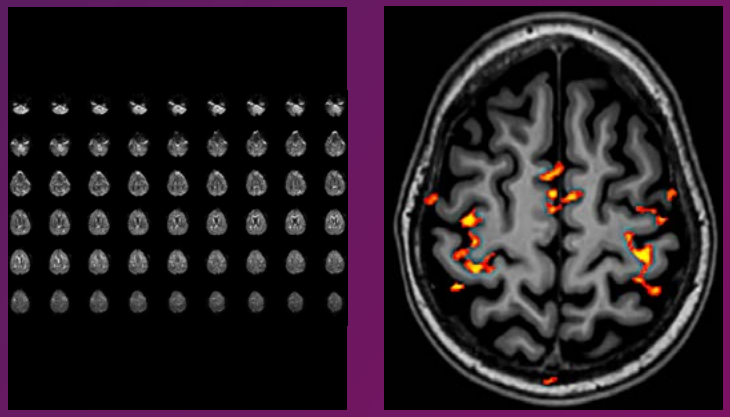
1 SyMRI NEURO, Synthetic MR, AB, Sweden. This material is not meant for distribution in the USA.



MultiBand SENSE

High acceleration for your fMRI and DTI sequences

MultiBand SENSE allows you to use state-of-the-art acceleration factors in the brain by simultaneously exciting multiple slices. Due to a shorter minimum TR for fMRI, larger anatomical coverage or higher temporal resolution can be used. In your DWI/DTI sequences larger anatomical coverage or higher number of diffusion directions can be acquired[1]. With MultiBand SENSE you can perform fMRI and DTI exams with high speed and high resolution, simultaneously[2].



fMRI exams with large anatomical coverage

Additional information:

- Accelerate EPI scans in the brain with virtually no impact on SNR[3].
- Reduce scan time in your diffusion weighted protocols up to 73%[4].
- Acceleration factors of up to 8 for fMRI.
- Acceleration factors of up to 4 for diffusion MRI.

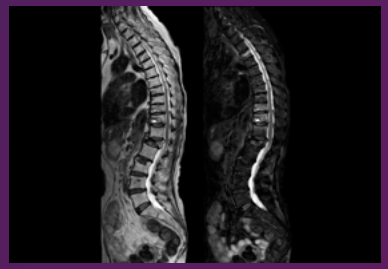
1 Due to a shorter minimum TR.
2 High speed due to using MultiBand SENSE and high resolution due to using in-plane dS SENSE.

3 Up to an MB SENSE factor of 3.
4 Compared to normal Philips diffusion scanning.

Our **Spine** applications

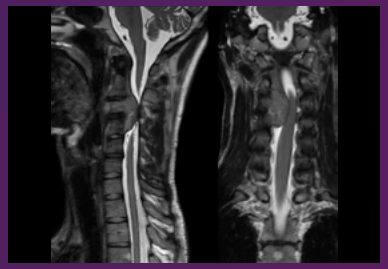
This set of clinical applications lets you extend the benefits of MRI to more patient groups and respond to the growing volume of spine exams. Featuring fat suppression, metal artifact reduction, motion correction and more, Philips fast and robust imaging and visualization tools help you gain clarity and visibility, simplify routine exams and take more definitive action.

SmartExam Spine **Page 18**
Standardized exams for consistent MRI results

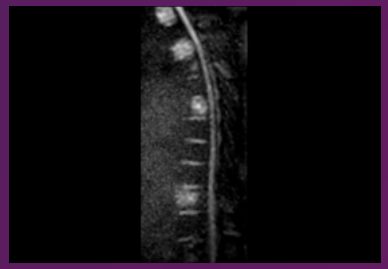


mDIXON XD TSE **Page 21**
Replace all your FatSat by one single fat-free imaging solution

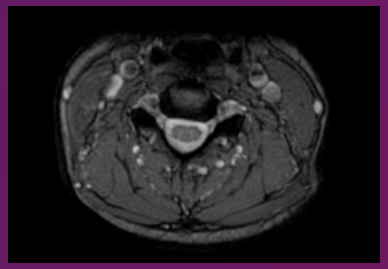
Zoom Diffusion
Small FOV diffusion imaging for improved image quality



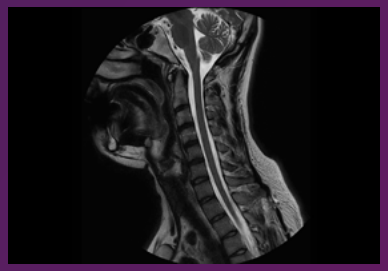
3D SpineVIEW **Page 19**
View your 3D TSE imaging data in any plane



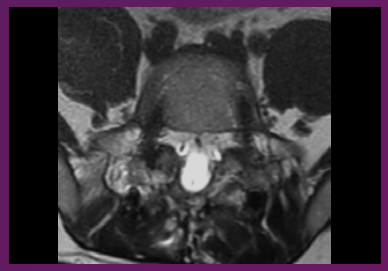
DWI TSE
Diffusion imaging with reduced distortion



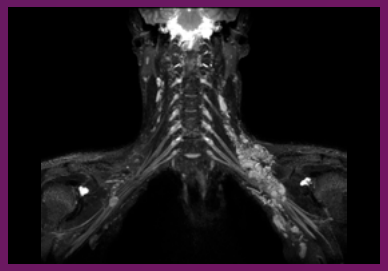
mFFE
Visualization of the spinal cord



MultiVane XD **Page 20**
Motion-free imaging in short scan time



O-MAR XD **Page 22**
Efficient near-metal soft tissue and bone imaging

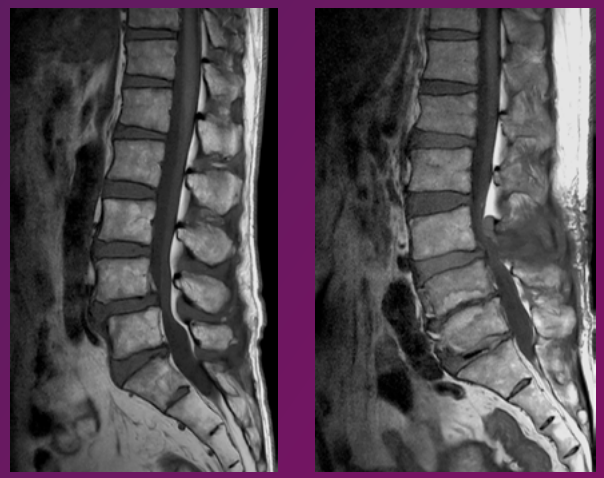


3D NerveVIEW **Page 23**
Review nerve plexus, non-invasively

SmartExam Spine

Standardized exams for consistent MRI results

SmartExam Spine[1] assists in delivering reproducible planning results in more than 80% of procedures by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.

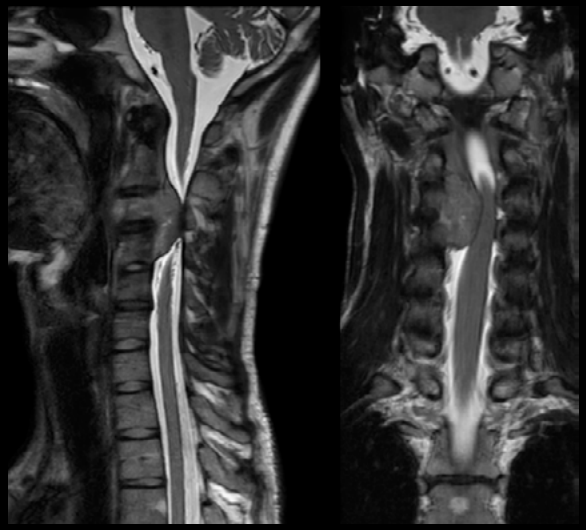


Consistent reading for any patient

Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Includes numbering of the vertebrae and automatically matches the planning of the axial stacks to the disc's orientation.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

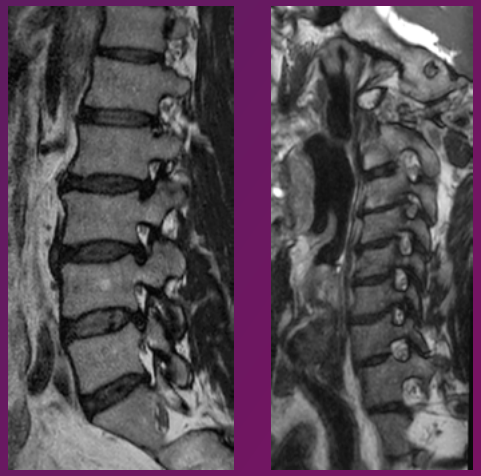
1 SmartExam is not available to patients with MR Conditional implants.



3D SpineVIEW

View your 3D TSE imaging data in any plane

3D SpineVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.



Viewing imaging data in oblique directions

Additional information:

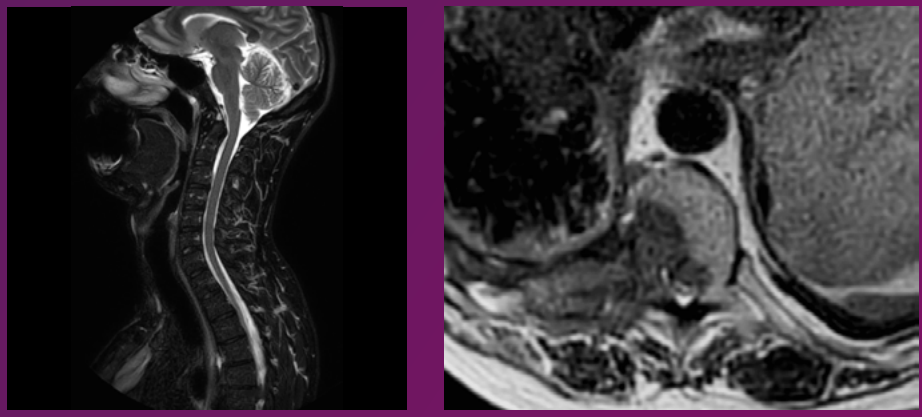
- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times[1].
- Available for a range of contrasts.

1 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

MultiVane XD

Motion-free imaging in short scan time

MultiVane XD delivers high resolution diagnostic images even in the case of severe patient motion by providing motion correction to a full range of anatomies, in short scan times[1]. MultiVane XD works in multiple orientations and for various contrasts (T1w, T2w, FLAIR) helping you to increase your diagnostic confidence.



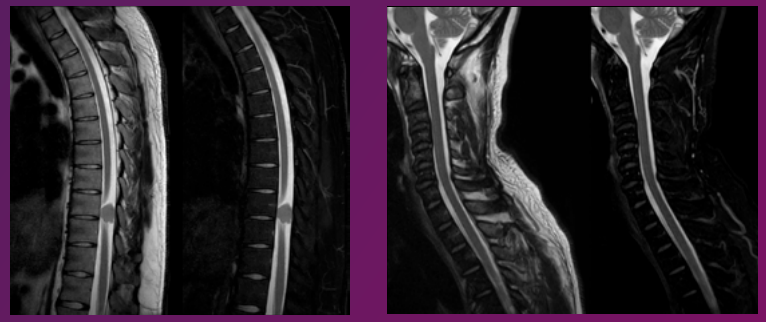
Diagnostic images, even in the case of severe patient motion

1 Compared to Multivane, thanks to compatibility with dS SENSE.

mDIXON XD TSE

Replace all your FatSat by one single fat-free imaging solution

mDIXON XD TSE brings a new dimension to fat suppression by providing uniform, complete and consistent fat-free imaging, even over large field-of-views and in challenging anatomies. Providing up to four image types in one single scan, including with/without fat suppression contrasts, in routine scan times and resolution simultaneously, you can easily replace your favorite routine TSE scans with it. mDIXON XD TSE will enable you to enhance your imaging strategies by simplifying your routine TSE procedures.



With/without fat suppression contrasts, simultaneously

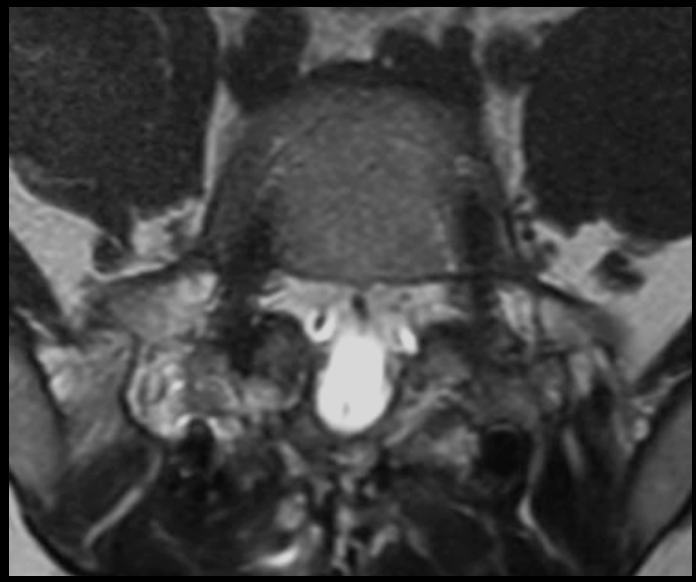
Additional information:

- 30% faster scanning and up to 30% reduced blurring[1].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

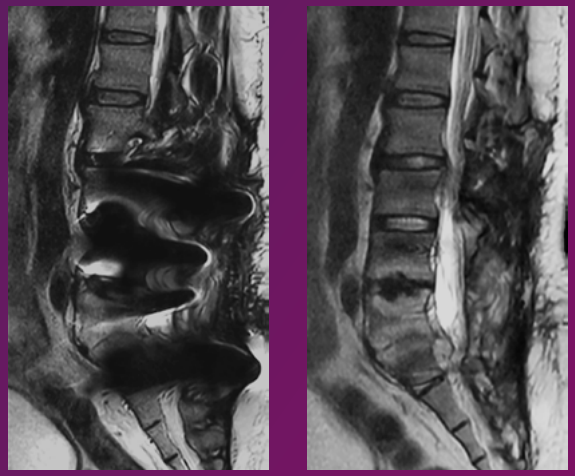
1 Due to its unique 2-echo technology, compared to the conventional 3-echo DIXON TSE techniques.
2 Compared to a standard non-fat-shift corrected fat-free TSE approach.

O-MAR XD

Efficient near-metal soft tissue and bone imaging



O-MAR XD (Metal Artifact Reduction for Orthopedic implants) allows you to improve visualization of more soft tissue and bone in the near vicinity of MR Conditional orthopedic implants[1]. This allows you to offer post-operative MR imaging to patients with implants who could develop implant-related conditions.



Traditional T2w TSE (left) versus T2w TSE O-MAR XD (right)

Additional information:

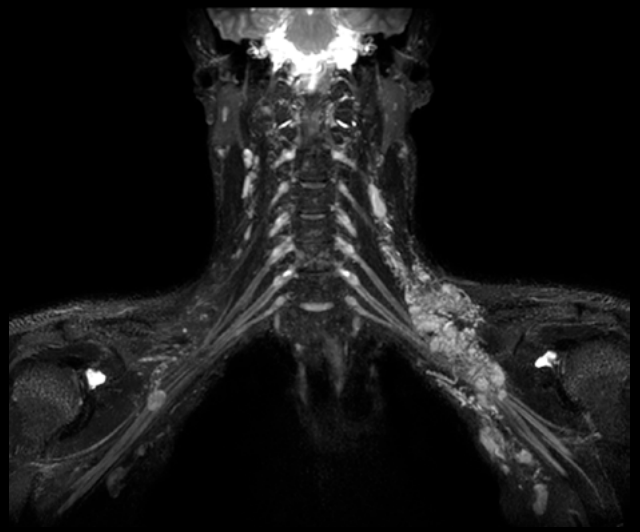
- Reduction of in- and throughplane susceptibility artifacts[2] caused by metal implants[1].
- Supports most relevant image contrasts (T1w, T2w, PDw, and STIR).
- Extending MARS (Metal Artifact Reduction Sequence) with the View Angle Tilting (VAT) and Slice Encoding for Metal Artifact Correction (SEMAC) techniques.

1 Only for use with MR Safe or MR Conditional implants by strictly following the Instructions for Use.

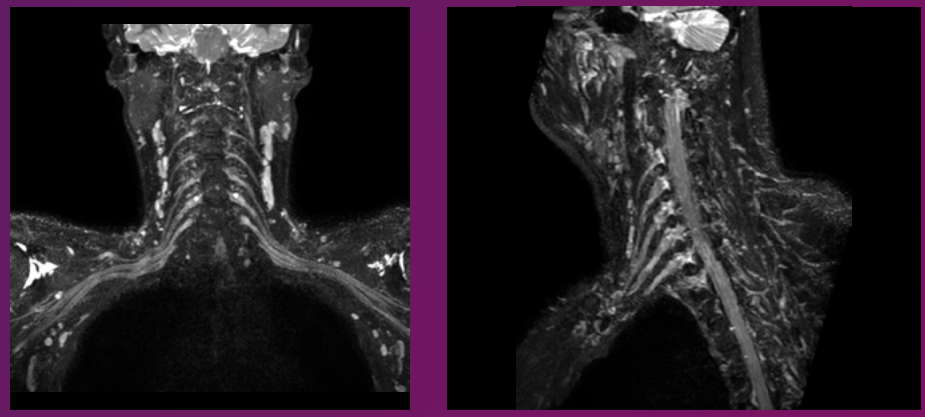
2 Compared to standard high bandwidth spin-echo based techniques.

3D NerveVIEW

Review nerve plexus, non-invasively



3D NerveVIEW improves visualization of the brachial and lumbar plexus by providing you with a high resolution T2w TSE acquisition with reduced remaining intra-lumen signal of the veins[1]. In addition, the 3D isotropic imaging method allows for reformats in any plane (including oblique) without loss of resolution helping you to save scan time and improve spinal nerve plexus assessment.



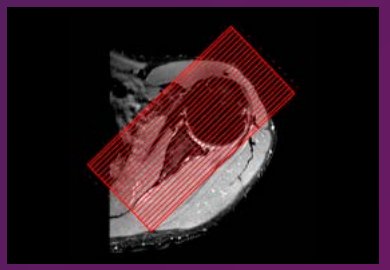
Improved visualization of the spinal nerve plexus

1 By use of MSDE black blood pre-pulse with STIR/SPAIR, compared to our STIR/SPAIR sequence without MSDE pre-pulse.

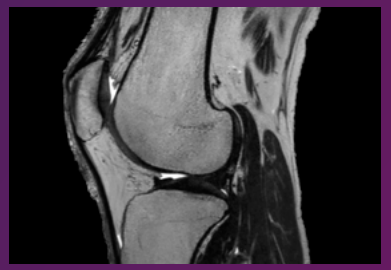
Our **MSK** applications

With ageing pop With dedicated applications for specific anatomies (including knee and shoulder), artifact reduction, and solutions for patients with implants, the MSK portfolio helps you enhance quality while making MR accessible to more people. Reproducible, standardized results help you enhance consistency in follow-up exams, helping you find answers to your most challenging MSK cases.

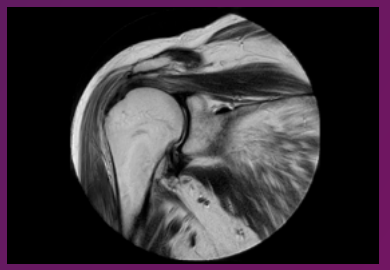
SmartExam Knee Page 25
Standardized exams for consistent MRI results



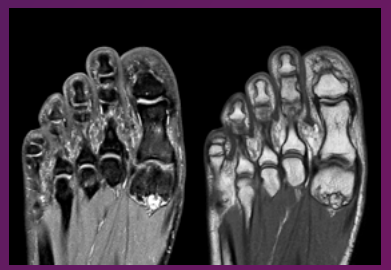
SmartExam Shoulder Page 26
Standardized exams for consistent MRI results



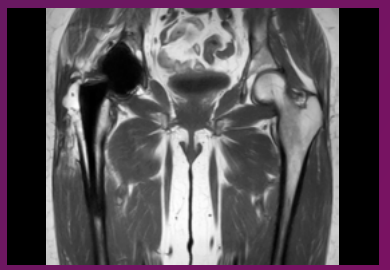
3D MSK VIEW Page 27
View your 3D TSE imaging data in any plane



MultiVane XD Page 28
Motion-free imaging in short scan time



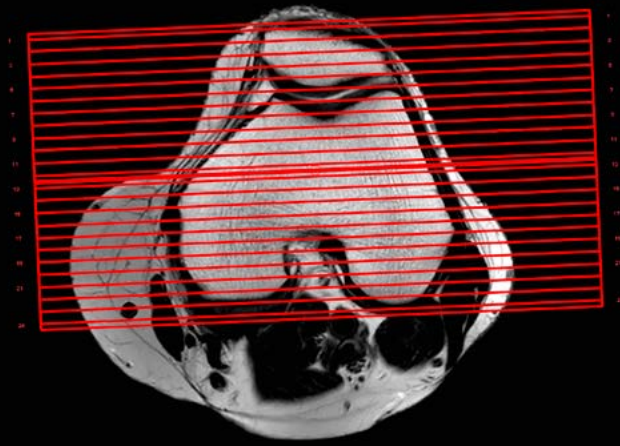
mDIXON XD TSE Page 29
Replace all your FatSat by one single fat-free imaging solution



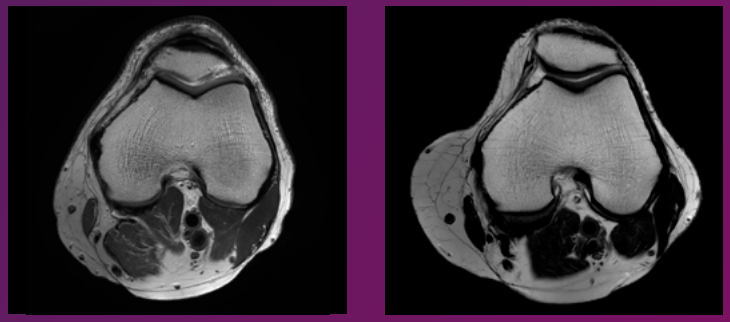
O-MAR XD Page 30
Efficient near-metal soft tissue and bone imaging

SmartExam Knee

Standardized exams for consistent MRI results



SmartExam Knee[1] assists in delivering reproducible planning results in more than 80% of procedures by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



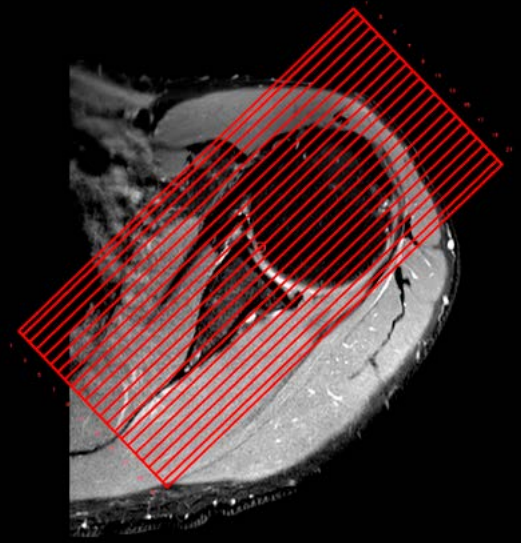
Consistent reading for any patient

Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

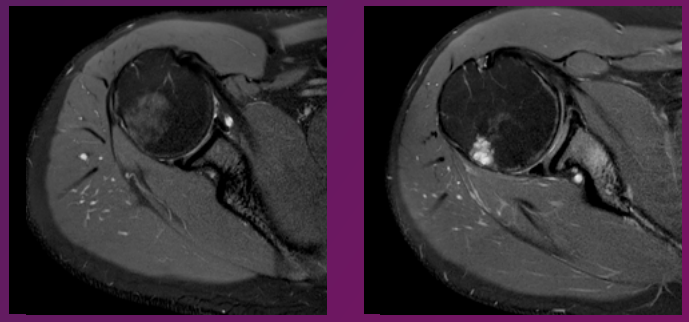
1 SmartExam is not available to patients with MR Conditional implants.

SmartExam Shoulder



Standardized exams for consistent MRI results

SmartExam Shoulder[1] assists in delivering reproducible planning results in more than 80% of procedures by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



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3D MSK VIEW

View your 3D TSE imaging data in any plane

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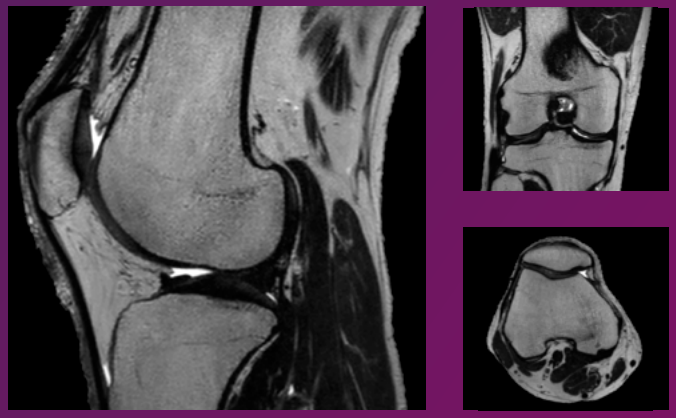


Data in multiple directions, in one scan

Additional information:

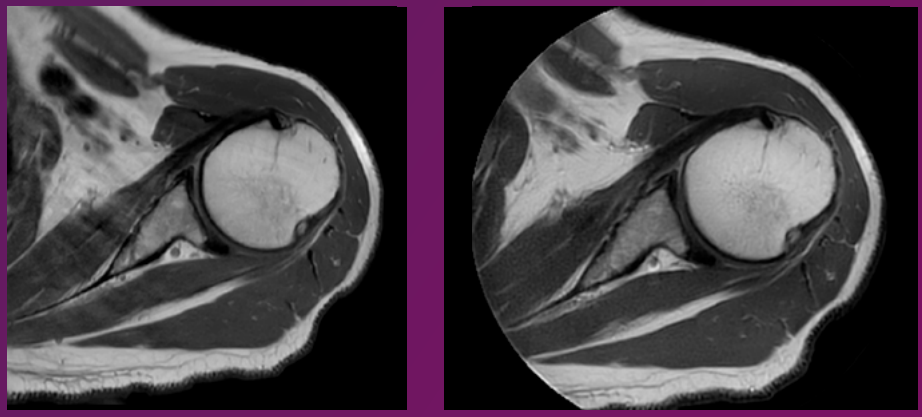
- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times[1].
- Available for a range of contrasts.

1 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

MultiVane XD

Motion-free imaging in short scan time

MultiVane XD delivers high resolution diagnostic images even in the case of severe patient motion by providing motion correction to a full range of anatomies, in short scan times[1]. MultiVane XD works in multiple orientations and for various contrasts (T1w, T2w, FLAIR) helping you to increase your diagnostic confidence.

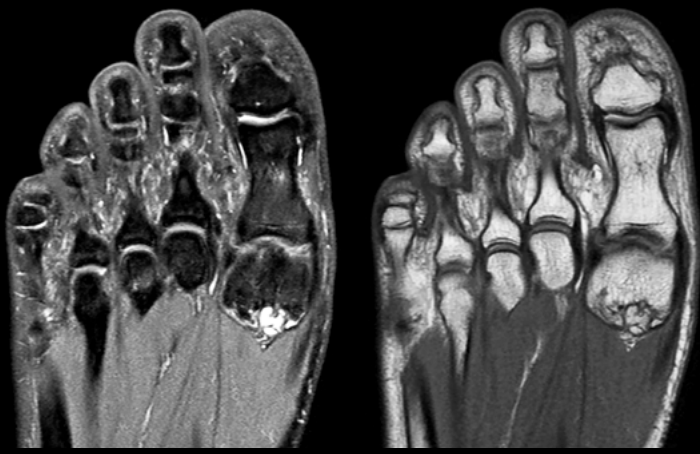


Comparison of a traditional PDw TSE scan (left) with a MutiVane XD - PDw TSE scan (right)

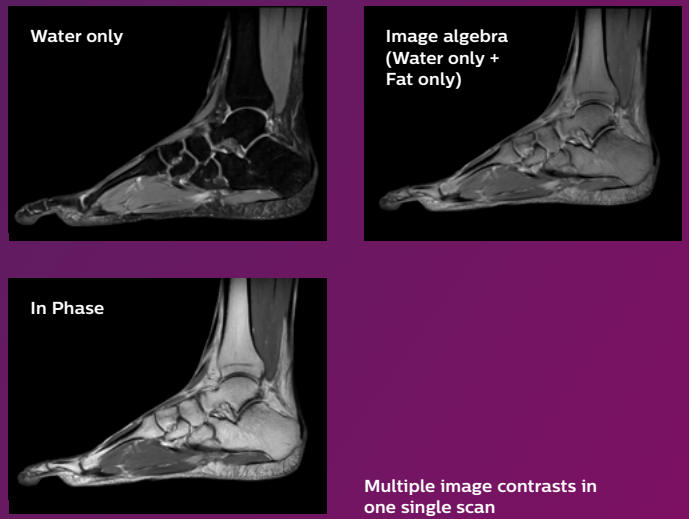
1 Compared to Multivane, thanks to compatibility with dS SENSE.

mDIXON XD TSE

Replace all your FatSat by one single fat-free imaging solution



mDIXON XD TSE brings a new dimension to fat suppression by providing uniform, complete and consistent fat-free imaging, even over large field-of-views and in challenging anatomies. Providing up to four image types in one single scan, including with/without fat suppression contrasts, in routine scan times and resolution simultaneously, you can easily replace your favorite routine TSE scans with it. mDIXON XD TSE will enable you to enhance your imaging strategies by simplifying your routine TSE procedures.



Multiple image contrasts in one single scan

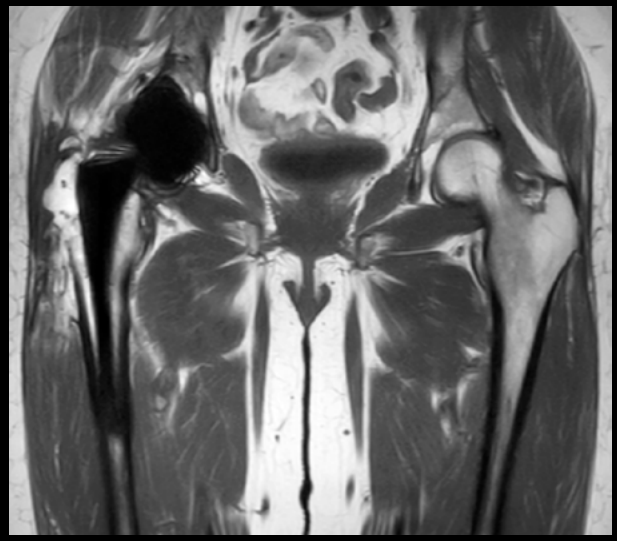
Additional information:

- 30% faster scanning and up to 30% reduced blurring[1].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

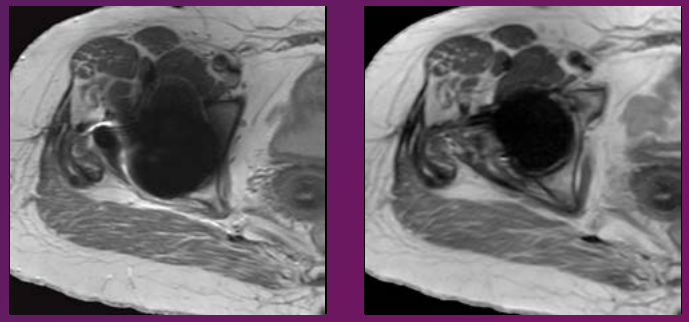
1 Due to its unique 2-echo technology, compared to the conventional 3-echo DIXON TSE techniques.
2 Compared to a standard non-fat-shift corrected fat-free TSE approach.

O-MAR XD

Efficient near-metal soft tissue and bone imaging



O-MAR XD (Metal Artifact Reduction for Orthopedic implants) allows you to improve visualization of more soft tissue and bone in the near vicinity of MR Conditional Orthopedic implants[1]. This allows you to offer postoperative MR imaging to patients with implants who could develop implant-related conditions.



Traditional PDw TSE (left) versus PDw TSE O-MAR XD (right)

Additional information:

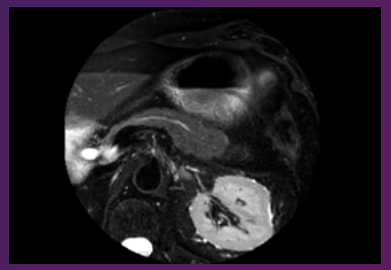
- Reduction of in- and throughplane susceptibility artifacts[2] caused by metal implants[1].
- Supports most relevant image contrasts (T1w, T2w, PDw, and STIR).
- Extending MARS (Metal Artifact Reduction Sequence) with the View Angle Tilting (VAT) and Slice Encoding for Metal Artifact Correction (SEMAC) techniques.

1 Only for use with MR Safe or MR Conditional implants by strictly following the Instructions for Use.

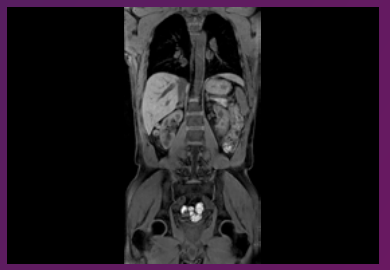
2 Compared to standard high bandwidth spin-echo based techniques.

Our **Abdomen** applications

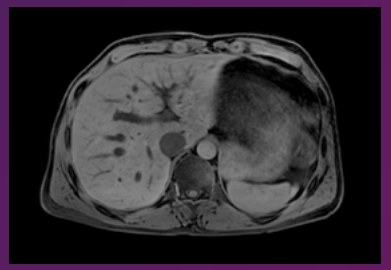
These applications include support for non-invasive assessment of tissue structure and liver stiffness, and answer the increasing need for motion free abdominal imaging. As a result, you gain a clear view of your patient while delivering a comfortable patient experience. Applications for abdominal scanning let you extend the benefits of MR to a broader patient base while gaining the insight you need.



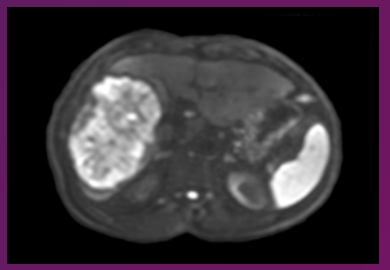
MultiVane XD Page 32
Motion-free imaging in short scan time



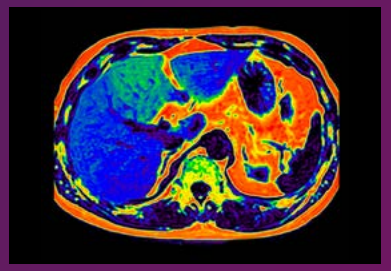
mDIXON XD FFE Page 33
Improve your fat-free imaging performance



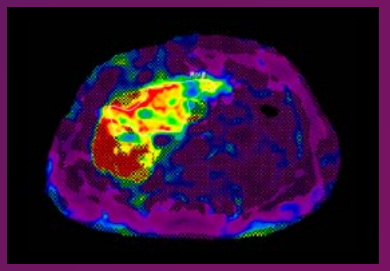
3D VANE XD Page 34
Free breathing abdominal imaging



Diffusion
Non-invasive assessment of tissue structure



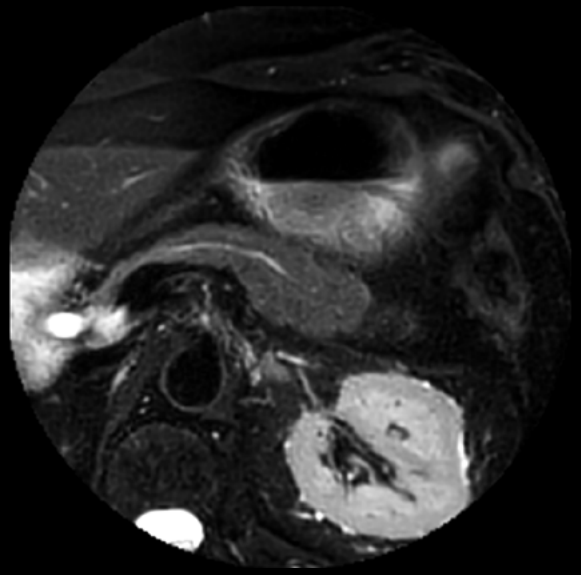
mDIXON Quant Page 35
Non-invasive liver fat fraction quantification



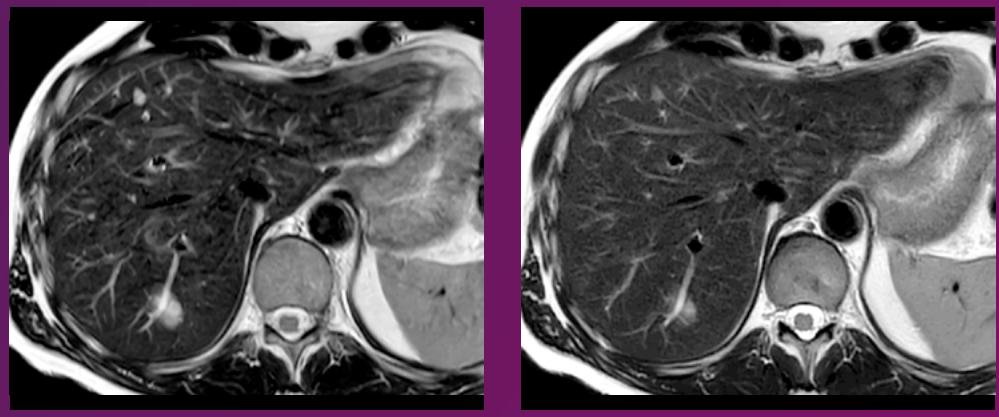
MR Elastography Page 36
Non-invasive assessment of liver tissue stiffness

MultiVane XD

Motion-free imaging in short scan time



MultiVane XD delivers high resolution diagnostic images even in the case of severe patient motion by providing motion correction to a full range of anatomies, in short scan times[1]. MultiVane XD works in multiple orientations and for various contrasts (T1w, T2w, FLAIR) helping you to increase your diagnostic confidence.



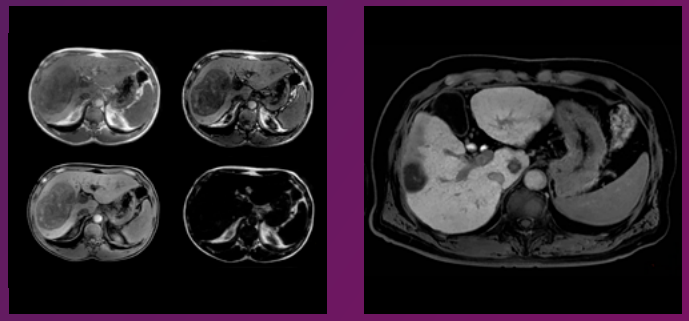
Traditional T2w TSE (left) versus a MutiVane XD – T2w TSE (right)

1 Compared to Multivane, thanks to compatibility with dS SENSE.

mDIXON XD FFE

Improve your fat-free imaging performance

mDIXON XD FFE provides more efficient fat-free imaging in routine scan times. Improve your fat-free imaging over large field-of-views and for high resolution imaging. With up to four image types in one single scan, including with or without fat suppression contrasts, mDIXON XD FFE will enable you to enhance your imaging strategies by simplifying your routine FFE procedures.



Multiple image contrasts in one single scan

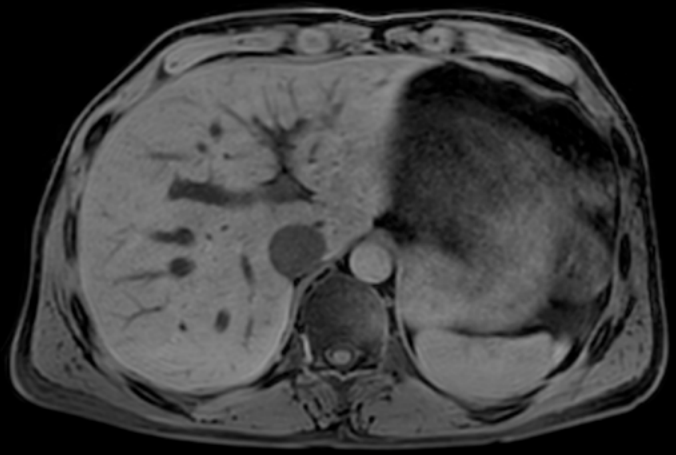
Additional information:

- Improved fat-free imaging over large 400-500 mm FOV and for sub-millimetric resolution[1].
- More efficient, faster scanning[2].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only)

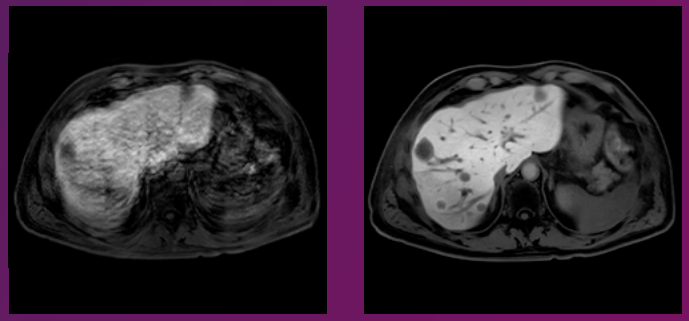
1 Compared to the standard mDIXON algorithm, due to unique 7-peak fat model and improved B0 correction.
2 Due to the unrestricted echo-time (TE) approach in mDIXON allowing more freedom in protocol optimization.

3D VANE XD

Free breathing abdominal imaging



3D VANE XD supports imaging of the abdomen without the need for the patient to hold their breath, helping you reduce motion artifacts during free breathing[1] and improve patient comfort. With 3D VANE XD, you can now accommodate patients who are unable to hold their breath, including pediatric patients.



Breathhold mDIXON XD (left) versus a free breathing 3D VANE XD (right)

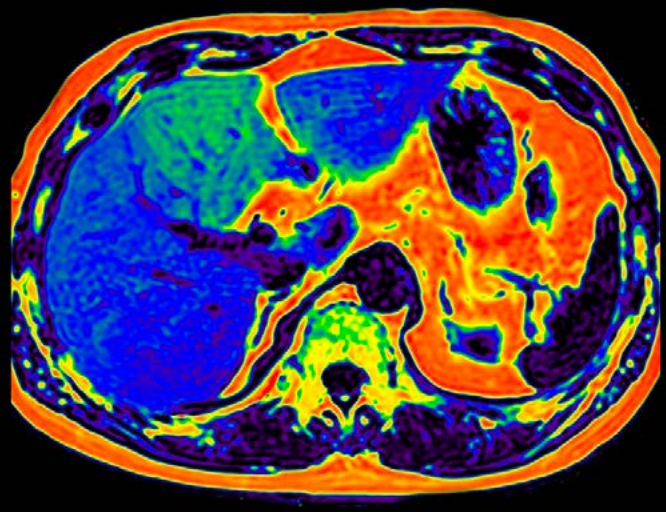
Additional information:

- 3D T1w FFE imaging method.
- Can be combined with fat suppression methods (eTHRIVE, mDIXON XD).

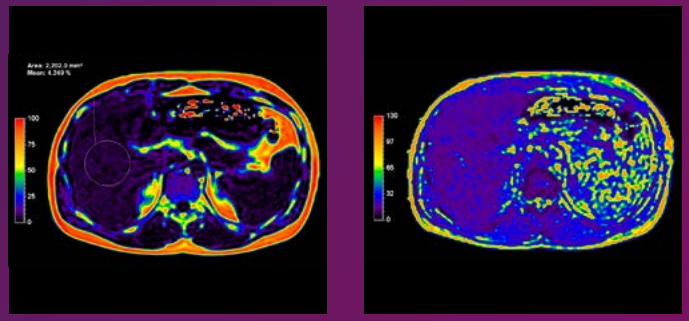
1 Due to radial imaging method, compared to Philips 3D cartesian imaging method.

mDIXON Quant

Non-invasive liver fat fraction quantification



mDIXON Quant brings a fast and simple 3D procedure for non-invasive liver fat quantification by providing high quality 3D fat fraction maps of the whole liver, even for short T2*, with high accuracy (± 3.5%) and reproducibility (± 1.4%)[1] allowing you to expand your MRI capabilities. T2*/R2* relaxation maps are provided to further help your diagnostic assessment.



Fat fraction maps (left) and T2*/R2* relaxation maps (right)

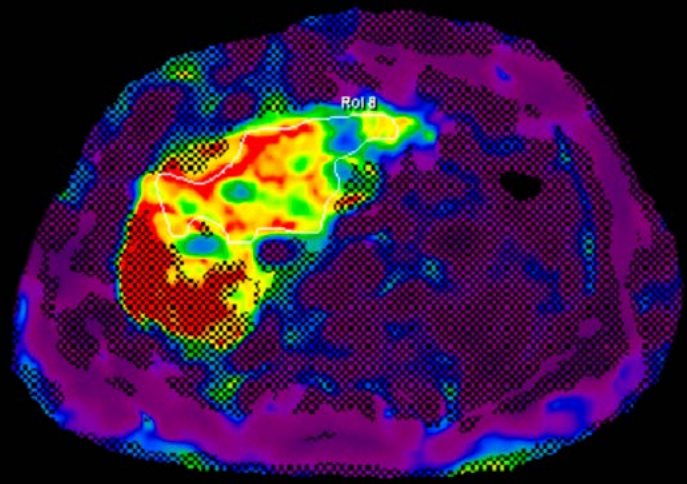
Additional information:

- Single breathhold acquisition.
- Based on state of the art 6-echo acquisition, 7-peak fat modeling reconstruction, correction for T2* confounding effect and low flip angle to minimize T1 bias.
- Fat fraction maps are displayed in colors with a quantification bar.

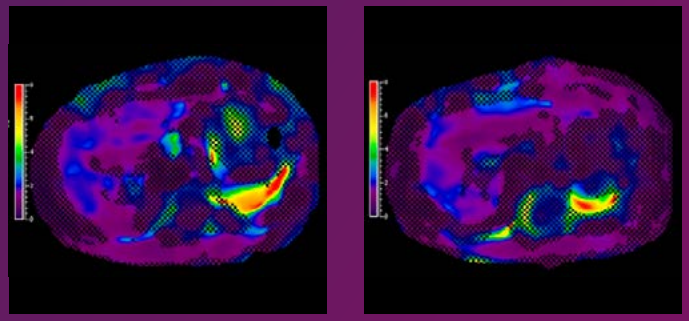
1 Accuracy and reproducibility were assessed using a reference liver protocol, on fat phantoms [range: 0-100%]. Reproducibility assessed over systems.

MR Elastography

Non-invasive assessment of liver tissue stiffness



MR Elastography allows for a non-invasive assessment of differences in tissue stiffness of the liver in a fast breathhold scan providing trained physicians with additional input to help make informed decisions about treatment.



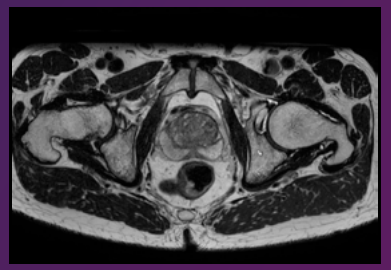
Elastograms reflecting tissue stiffness in kPa

Additional information:

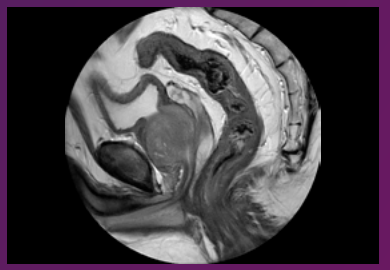
- Image processing is fully integrated at the scanner.
- Automated calculation of Elastograms, reflecting tissue stiffness in kPa.
- Statistical confidence map is provided for reliability assessment.

Our **Pelvis** applications

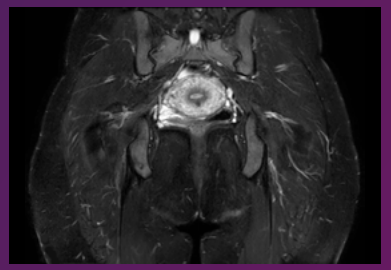
MR clinical applications for pelvis exams feature fat suppression techniques that let you replace all your other fat-sat solutions, improving efficiency in how you work. Moreover, motion reduction imaging allows you to get the clarity and quality you need while keeping scan times short. As a result, you can enhance your imaging strategies and gain greater diagnostic confidence including for the detection of small lesions.



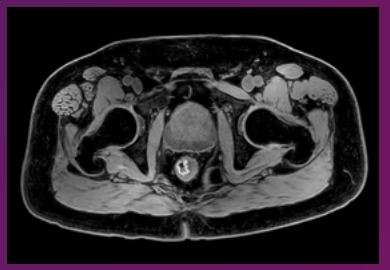
3D PelvisVIEW Page 38
View your 3D TSE imaging data in any plane



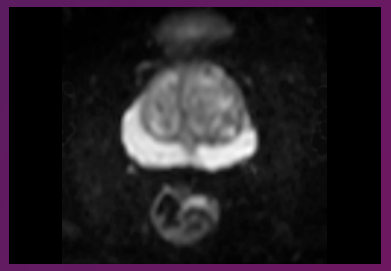
MultiVane XD Page 39
Motion-free imaging in short scan time



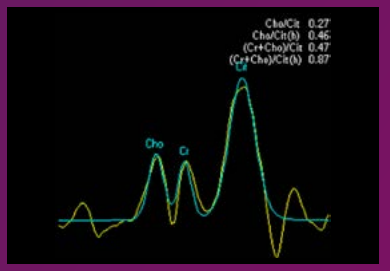
mDIXON XD TSE Page 40
Replace all your FatSat by one single fat-free imaging solution



mDIXON XD FFE Page 41
Improve your fat-free imaging performance

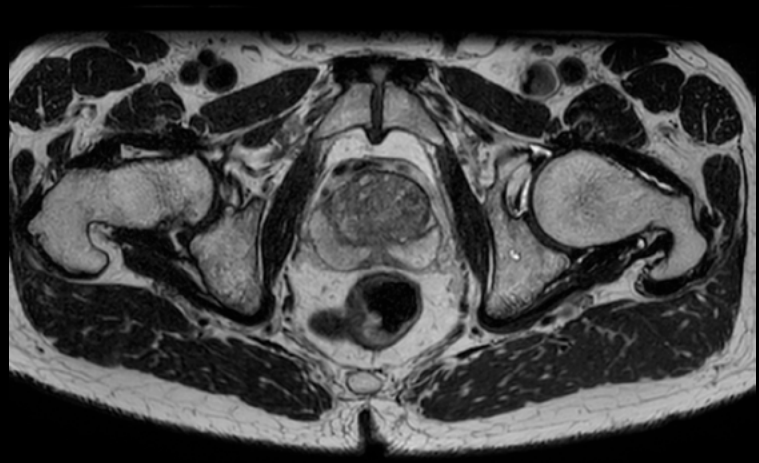


Diffusion
Non-invasive assessment of tissue structure



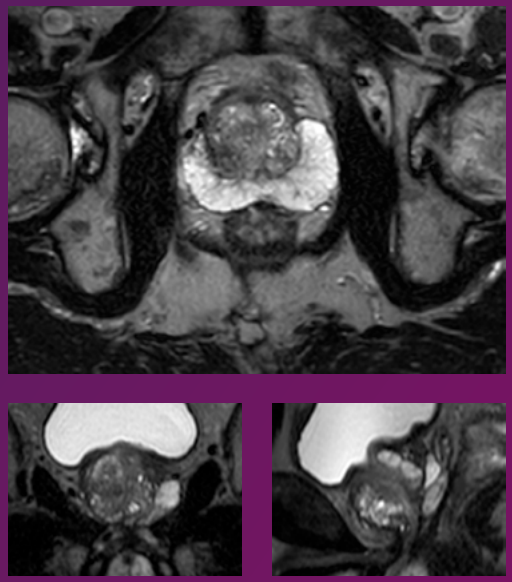
Spectroscopy
Complete set of proton spectroscopy acquisition methods

3D PelvisVIEW



View your 3D TSE imaging data in any plane

3D PelvisVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.



Data in multiple directions, in one scan

Additional information:

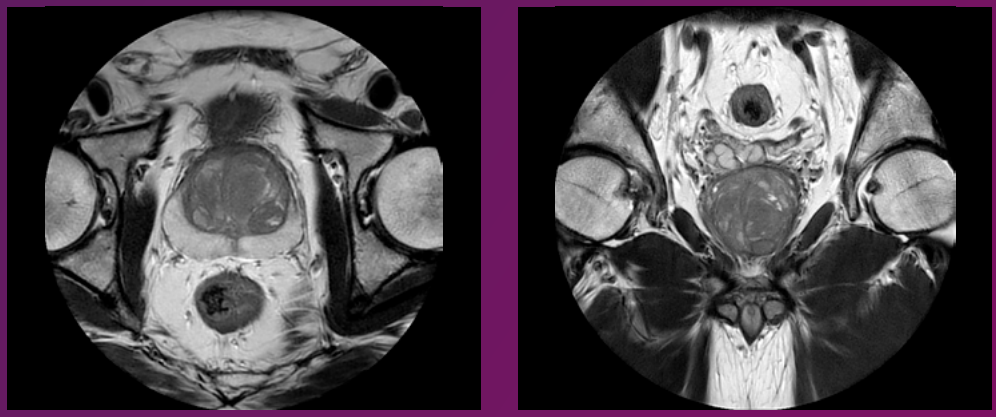
- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times[1].
- Available for a range of contrasts.

2 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

MultiVane XD

Motion-free imaging in short scan time

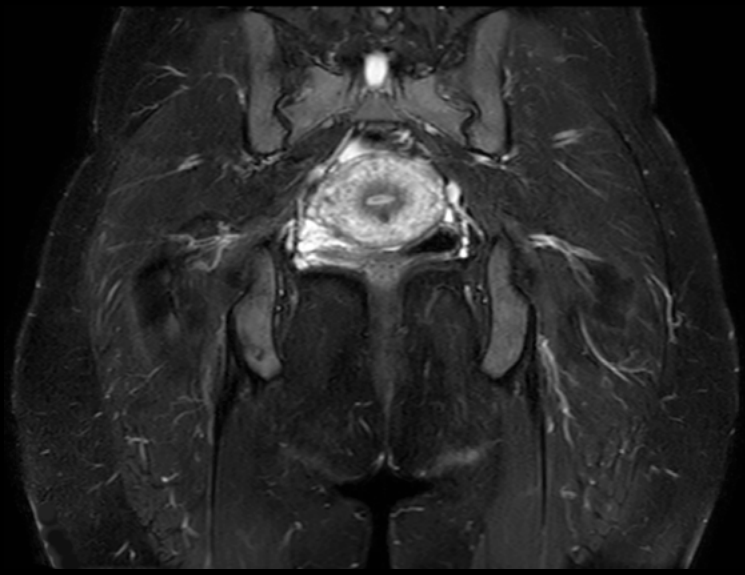
MultiVane XD delivers high resolution diagnostic images even in the case of severe patient motion by providing motion correction to a full range of anatomies, in short scan times[1]. MultiVane XD works in multiple orientations and for various contrasts (T1w, T2w, FLAIR) helping you to increase your diagnostic confidence.



Diagnostic images, even in the case of severe patient motion

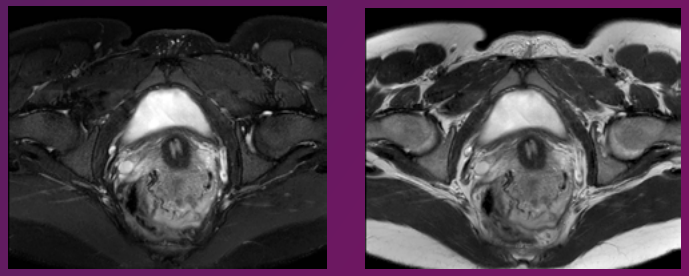
1 Compared to Multivane, thanks to compatibility with dS SENSE.

mDIXON XD TSE



Replace all your FatSat by one single fat-free imaging solution

mDIXON XD TSE brings a new dimension to fat suppression by providing uniform, complete and consistent fat-free imaging, even over large field-of-views and in challenging anatomies. Providing up to four image types in one single scan, including with/without fat suppression contrasts, in routine scan times and resolution simultaneously, you can easily replace your favorite routine TSE scans with it. mDIXON XD TSE will enable you to enhance your imaging strategies by simplifying your routine TSE procedures.



Multiple image contrasts in one single scan

Additional information:

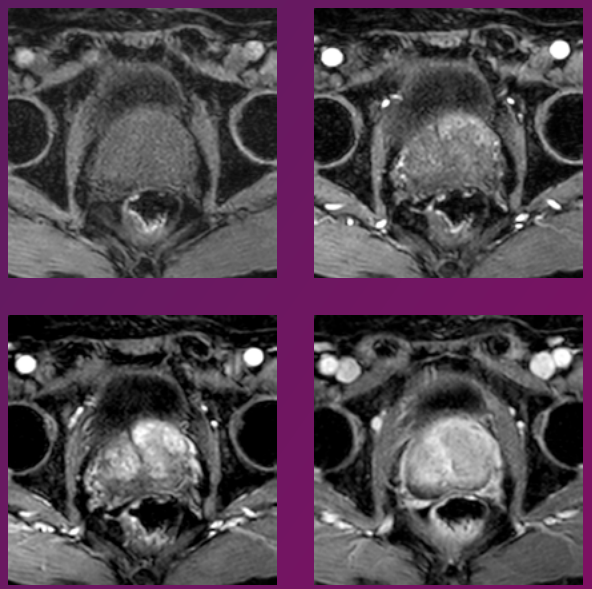
- 30% faster scanning and up to 30% reduced blurring[1].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

1 Due to its unique 2-echo technology, compared to the conventional 3-echo DIXON TSE techniques.
2 Compared to a standard non-fat-shift corrected fat-free TSE approach.

mDIXON XD FFE

Improve your fat-free imaging performance

mDIXON XD FFE improves your fat-free imaging for high resolution routine scans and provides more efficient dynamic scans. With up to four image types in one single scan, including with or without fat suppression contrasts, mDIXON XD FFE will enable you to enhance your imaging strategies by simplifying your routine and dynamic FFE procedures.



Dynamic fat-free imaging

Additional information:

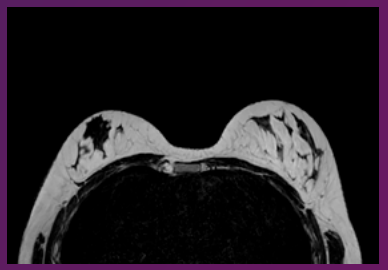
- Improved fat-free imaging for sub-millimetric resolution[1].
- More efficient, faster scanning[2].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

1 Compared to the standard mDIXON algorithm, due to unique 7-peak fat model and improved B0 correction.
2 Due to the unrestricted echo-time (TE) approach in mDIXON allowing more freedom in protocol optimization.

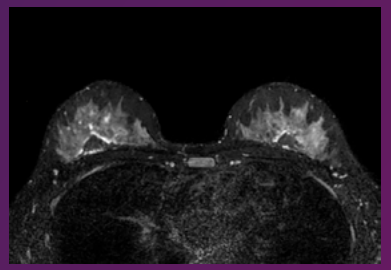
Our **Breast** applications

Advanced clinical tools specially designed to support breast exams help you gain the high resolution and contrast you need and enhance consistency across follow-up exams and between patients. Furthermore, fat suppression techniques deliver consistent fat-free imaging, helping you improve image quality. High-resolution data in multi directions in a single scan means you can improve confidence in lesion detection.

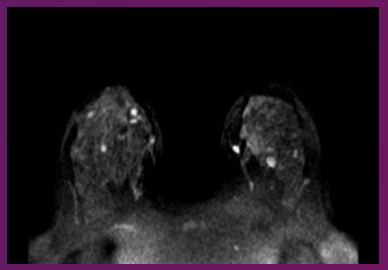
SmartExam Breast Page 43
Consistent fat suppression for every patient



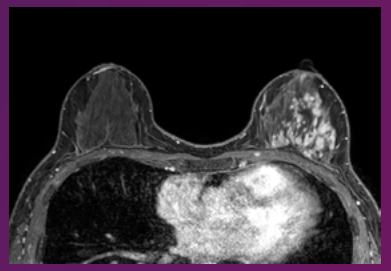
3D BreastVIEW Page 44
View your 3D TSE imaging data in any plane



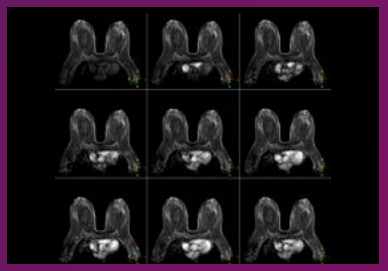
mDIXON XD TSE Page 45
Replace all your FatSat by one single fat-free imaging solution



Diffusion
Non-invasive assessment of tissue structure



mDIXON XD FFE Page 46
Improve your fat-free imaging performance

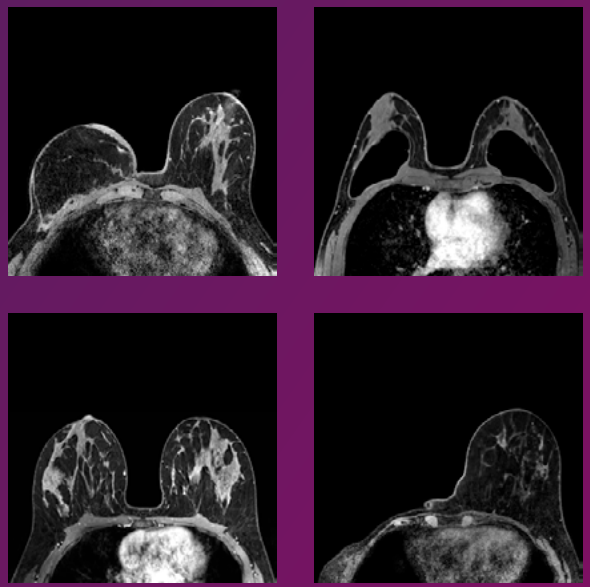


4D THRIVE
High temporal resolution dynamic scanning

SmartExam Breast

Consistent fat suppression for every patient

SmartExam Breast[1] provides consistent fat suppression for every patient and assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



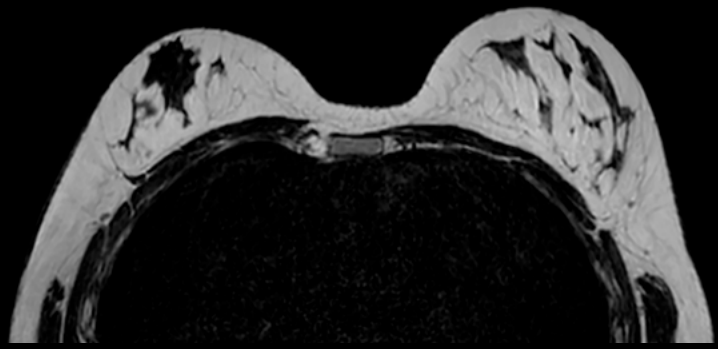
Consistent fat suppression for every patient

Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

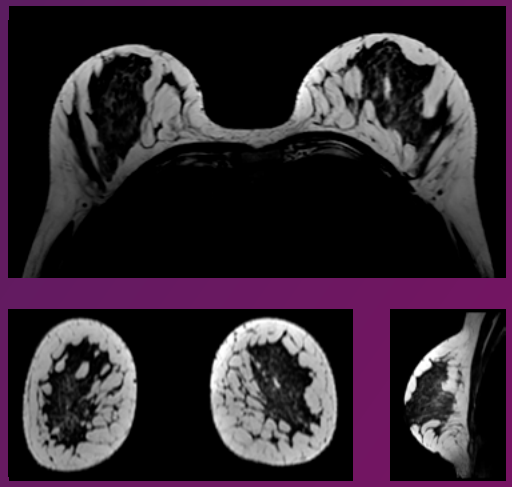
1 SmartExam is not available to patients with MR Conditional implants.

3D BreastVIEW



View your 3D TSE imaging data in any plane

3D BreastVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.



Data in multiple directions, in one scan

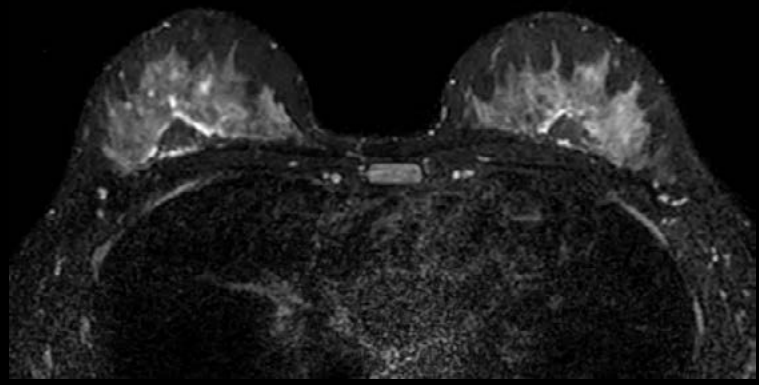
Additional information:

- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times[1].
- Available for a range of contrasts.

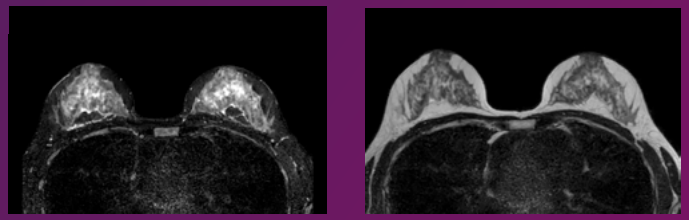
1 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

mDIXON XD TSE

Replace all your FatSat by one single fat-free imaging solution



mDIXON XD TSE brings a new dimension to fat suppression by providing uniform, complete and consistent fat-free imaging, even over large field-of-views and in challenging anatomies. Providing up to four image types in one single scan, including with/without fat suppression contrasts, in routine scan times and resolution simultaneously, you can easily replace your favorite routine TSE scans with it. mDIXON XD TSE will enable you to enhance your imaging strategies by simplifying your routine TSE procedures.



With/without fat suppression contrasts, in one single scan

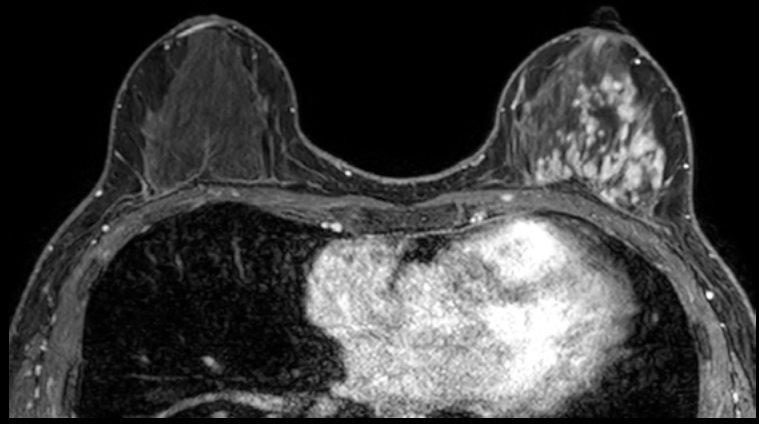
Additional information:

- 30% faster scanning and up to 30% reduced blurring[1].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

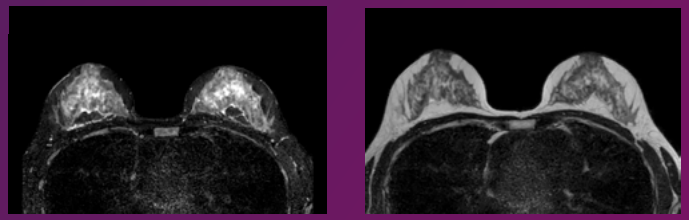
1 Due to its unique 2-echo technology, compared to the conventional 3-echo DIXON TSE techniques.
2 Compared to a standard non-fat-shift corrected fat-free TSE approach.

mDIXON XD FFE

Improve your fat-free imaging performance



mDIXON XD FFE provides more efficient fat-free imaging in routine scan times. Improve your fat-free imaging for high resolution imaging. With up to four image types in one single scan, including with or without fat suppression contrasts, mDIXON XD FFE will enable you to enhance your imaging strategies by simplifying your routine FFE procedures.



With/without fat suppression contrasts, in one single scan

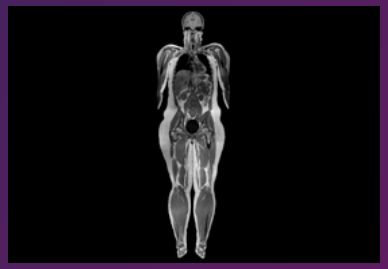
Additional information:

- Improved fat-free imaging for sub-millimetric resolution[1].
- More efficient, faster scanning[2].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

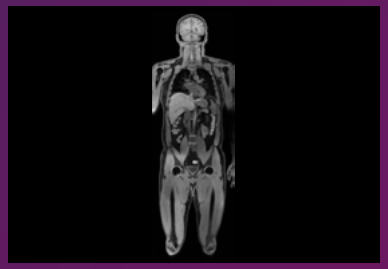
1 Compared to the standard mDIXON algorithm, due to unique 7-peak fat model and improved B0 correction.
2 Due to the unrestricted echo-time (TE) approach in mDIXON allowing more freedom in protocol optimization.

Our **Whole body** applications

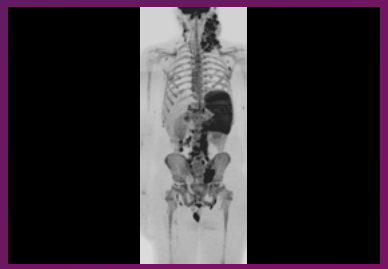
MR clinical applications can give a clear head-to-toe view of the entire body helping you deliver clarity for more confident diagnostic decisions. This toolset includes functionality for fat-free imaging over large fields of view, as well as diffusion weighted imaging for simpler visualization of lesions. The Whole Body package helps you extend the benefits of MR to a larger patient population.



Whole Body **Page 48**
Get comfortable body imaging with head-to-toe coverage



mDIXON XD FFE MultiStation Page 49
Improve your fat-free imaging over large fields-of-view

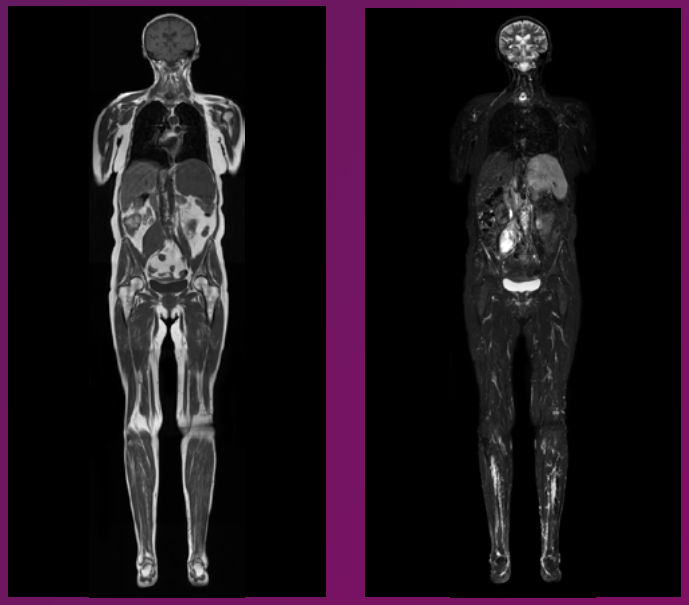


DWIBS **Page 50**
Easily visualize lesions throughout the body

Whole Body

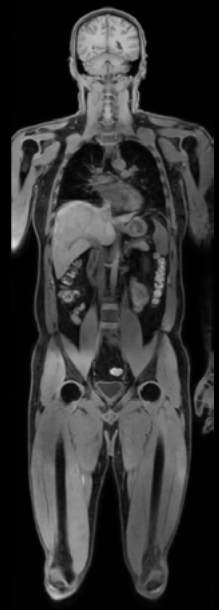
Get comfortable body imaging with head-to-toe coverage

Whole Body package supports automated head-to-toe imaging coverage. By allowing an extended table stroke, it enables whole-body, multi-station, feet-first imaging studies. You can perform all required imaging sequences per station, reducing the amount of required table movements.



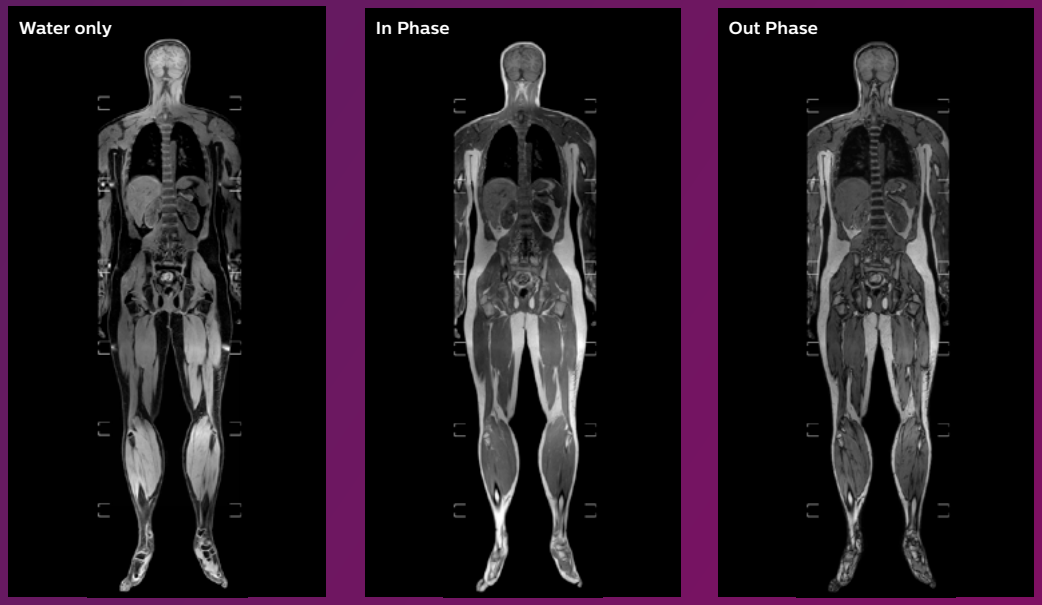
Head to toe imaging coverage

mDIXON XD FFE MultiStation



Improve your fat-free imaging over large fields-of-view

mDIXON XD FFE MultiStation provides more efficient fat-free imaging in routine scan times. Improve your fat-free imaging over large field-ofviews and for high resolution imaging. With up to four image types in one single scan, including with or without fat suppression contrasts, mDIXON XD FFE MultiStation will enable you to enhance your imaging strategies by simplifying your whole body FFE procedures.

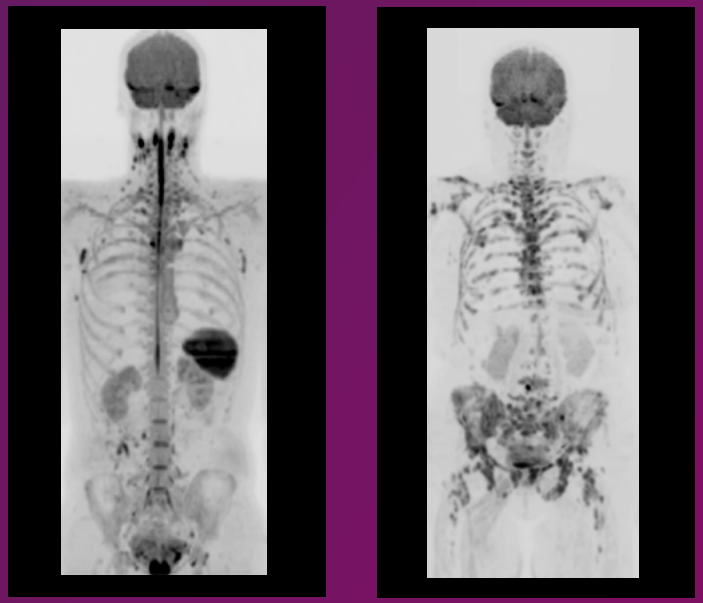


Multiple image contrasts in one single scan

DWIBS

Easily visualize lesions throughout the body

Diffusion Weighted Imaging with Background Suppression (DWIBS) is an alternative to PET-CT for visualizing lesions throughout the body, supporting the role of MR in oncology studies. DWIBS suppresses normal organ tissue, blood, muscles and fat to achieve high contrast between background and lesions. Moreover, patients can breathe freely during the entire DWIBS study.

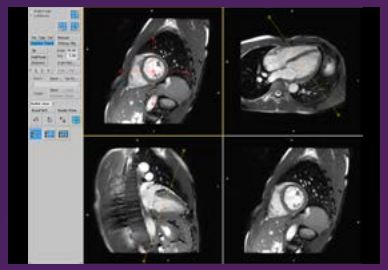


High contrast between background and lesions

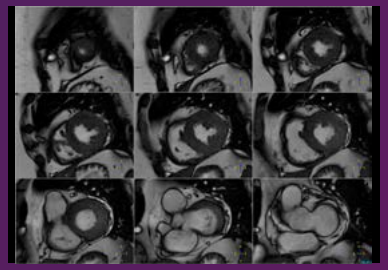
Our **Cardiovascular** applications

Cardiac imaging is a dynamic, fast-moving field. Philips provides solutions to help you keep pace with trends, including support for image analysis and direct quantification. Our clinical applications support fast, robust cardiac imaging and visualization, helping you make an informed diagnosis. This advanced toolset lets you make MR personalized and definitive through quantitative results.

Philips MR clinical applications for vascular exams deliver robust and fast insights into intricate vascular structures. High spatial and temporal resolution helps you clearly visualize the exact information you need to make diagnostic and treatment decisions.

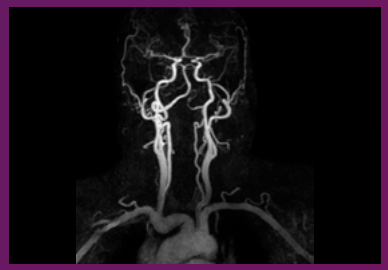


Real Time Cardiac
Benefit from intuitive planning for cardiac studies

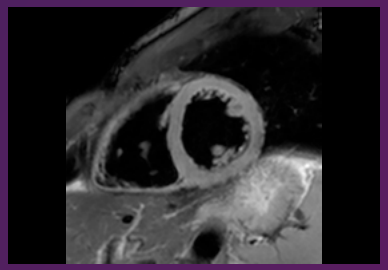


K-t BLAST
Speed up your dynamic cardiac examinations

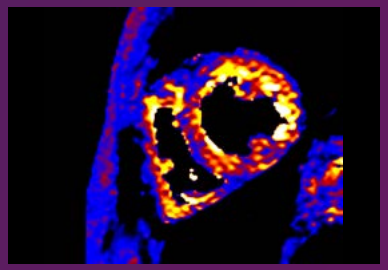
Cardiac Expert **Page 53**
Expand your cardiac MR functionality



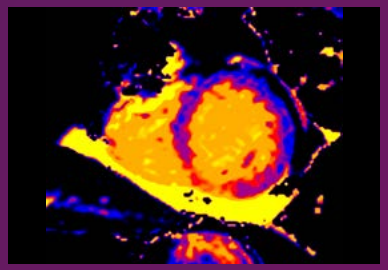
4D-TRAK XD **Page 54**
Flexibility in your MR Angiography studies



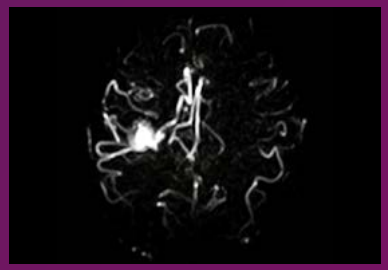
Cardiac MS/QF **Page 55**
Elevate your cardiac imaging to clinical routine level



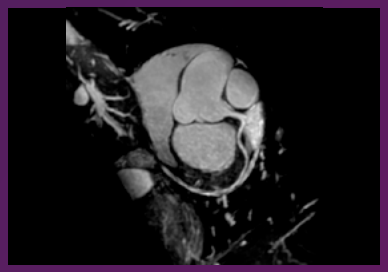
StarQuant **Page 56**
Non-invasive T2* and T2 assessment of myocardial tissue



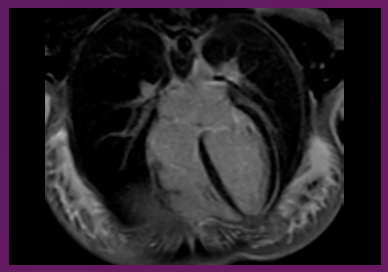
CardiacQuant **Page 57**
Non-invasive T2*, T2 and T1 assessment of myocardial tissue



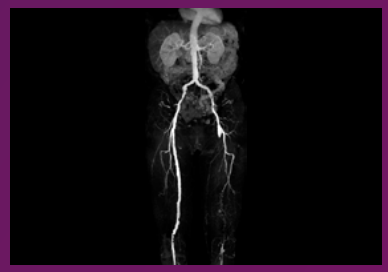
4D-TRANCE **Page 58**
Contrast-free imaging of brain vascular anatomy



Coronary Acquisition **Page 59**
Perform non-invasive imaging of coronary arteries



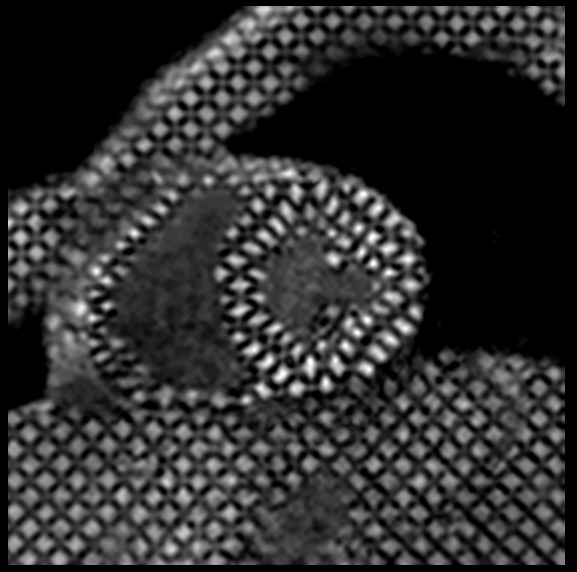
mDIXON XD FFE **Page 60**
Fat-free cardiac imaging



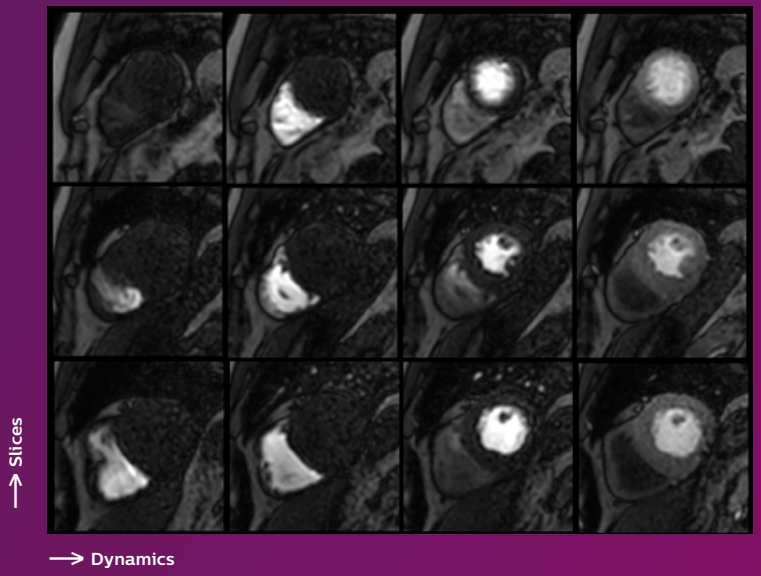
mDIXON XD MultiStation **Page 61**
Non-subtraction peripheral MR Angiography

Cardiac Expert

Expand your cardiac MR functionality



Cardiac Expert supports the acquisition of multi-slice, dynamic tissue studies with T1 weighting and uniform tissue suppression[1] by including Look Locker methods for determining an optimal inversion delay time. Cardiac Expert also provides myocardial tagging[2] to allow assessment of regional wall motion and allows for real-time interactive planning of challenging cardiac views.

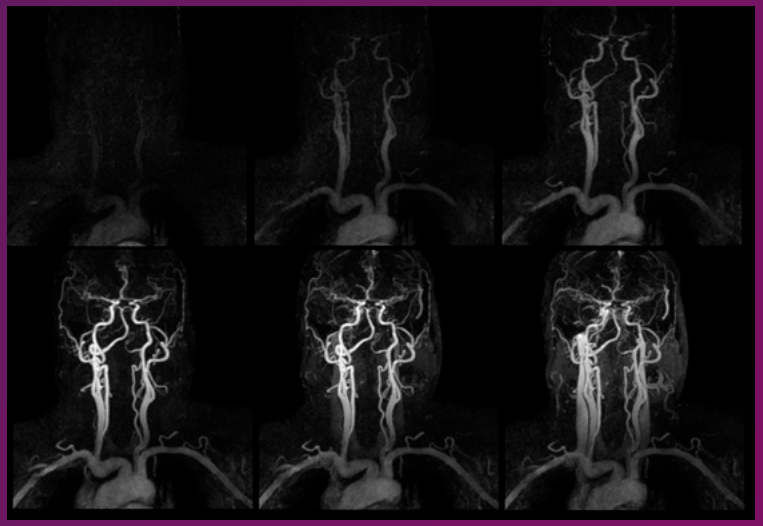


1 With a (B1 insensitive) saturation pre-pulse
2 By means of REST grids

4D-TRAK XD

Flexibility in your MR Angiography studies

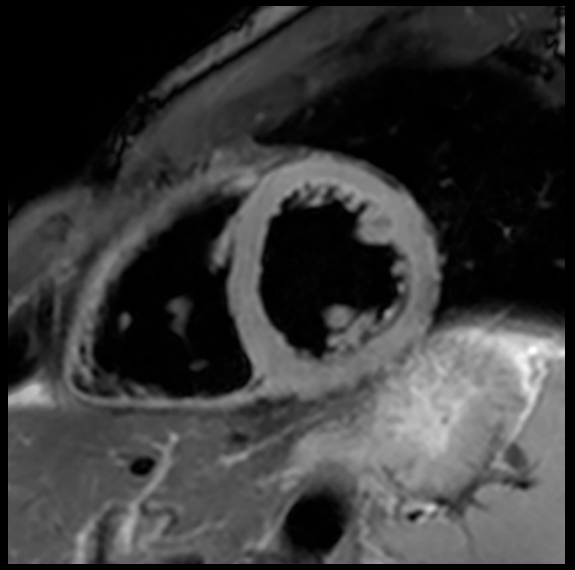
4D-TRAK XD provides a fast, dynamic contrast-enhanced MR Angiography method with flexible sampling of both the arterial- and venous phase, by applying view sharing technique, enabling high spatial and temporal resolution simultaneously.



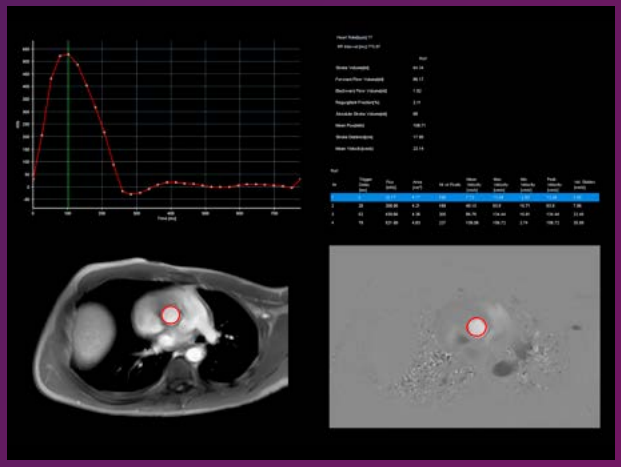
Fast, dynamic contrast-enhanced MR Angiography

Cardiac MS/QF

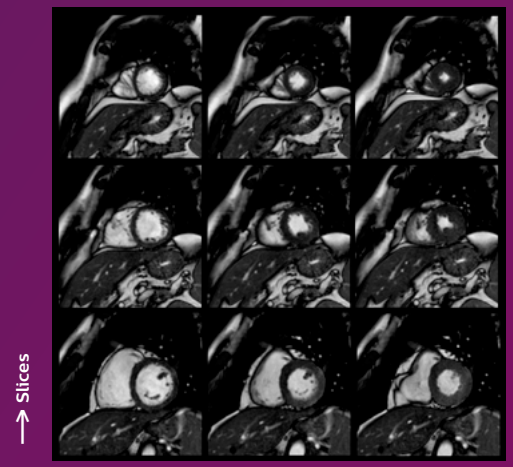
Elevate your cardiac imaging to clinical routine level



Cardiac MS/QF adds multi-slice capability to your multi-phase cine acquisitions, and supports myocardial tissue characterization by allowing for black blood imaging. Cardiac MS/QF also allows for non-invasive measurements of blood flow by including display of color-encoded flow maps.

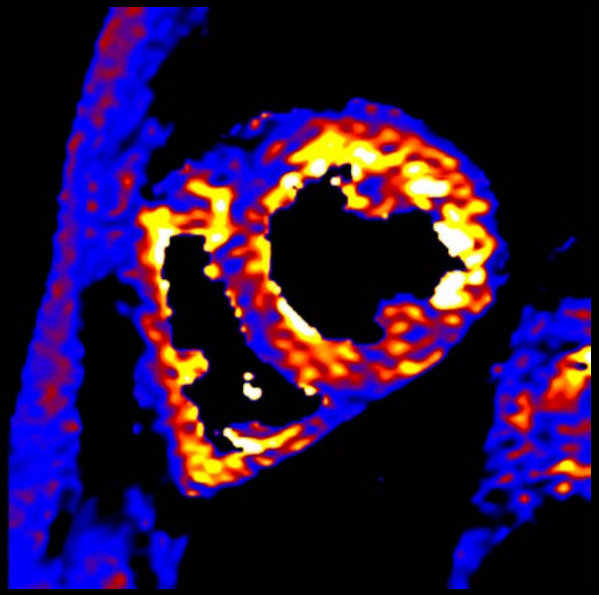


Non-invasive measurements of blood flow

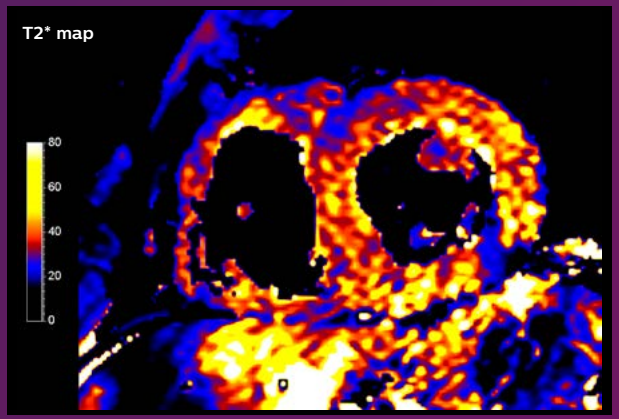


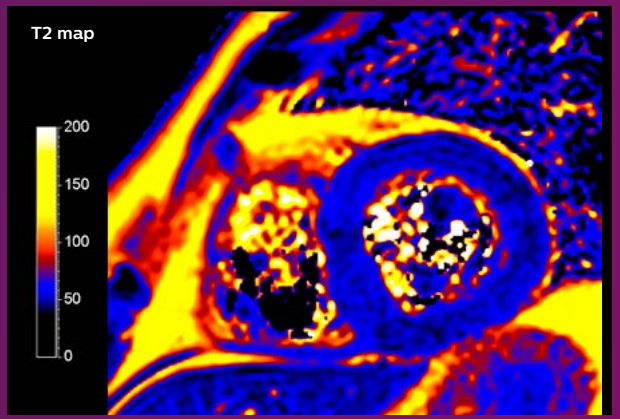
StarQuant

Non-invasive T2* and T2 assessment of myocardial tissue



With StarQuant you get access to exciting new applications for cardiology, which can help in the non-invasive assessment of myocardial tissue characteristics by providing you with comprehensive graphs and pixel-based, quantitative T2/R2 and T2*/R2* maps in a single breathhold scan helping you to make early decisions for therapy.

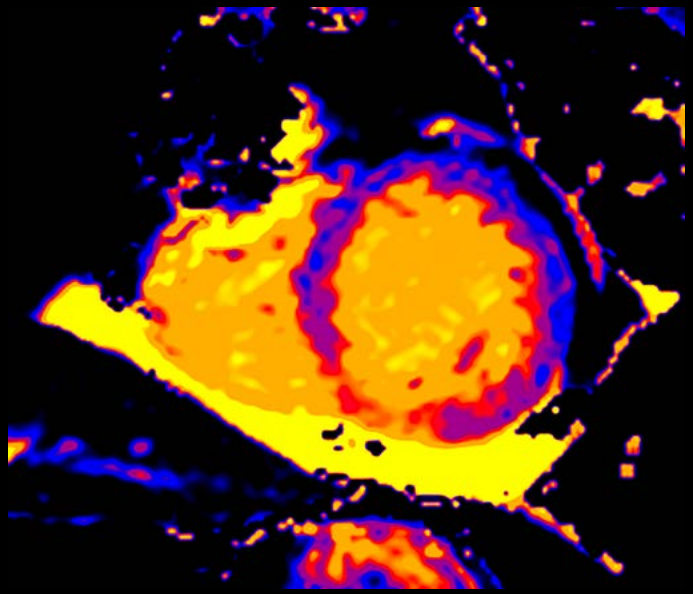




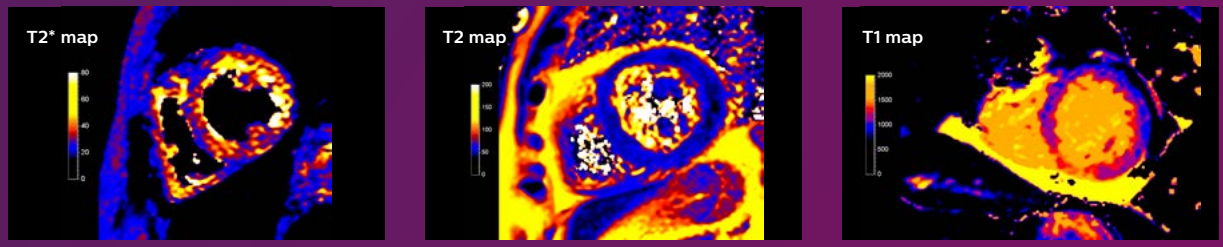
Quantitative T2* and T2 maps in a single breathhold scan

CardiacQuant

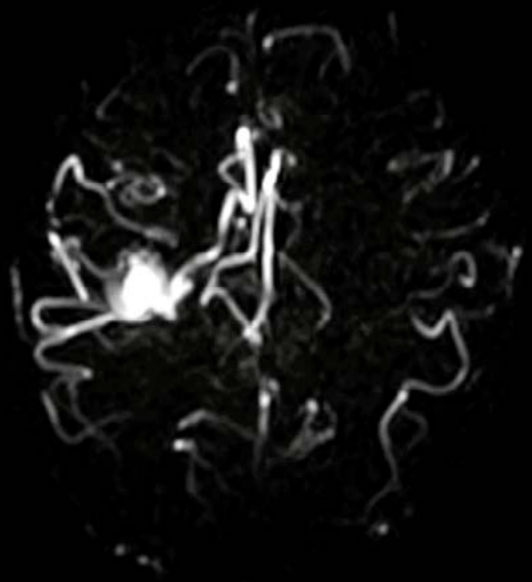
Non-invasive T2*, T2 and T1 assessment of myocardial tissue



With CardiacQuant you get access to exciting new applications for cardiology, which can help in the non-invasive assessment of myocardial tissue characteristics by providing you with comprehensive graphs and pixel-based, quantitative information in different regions of the myocardium helping you to make early decisions for therapy.



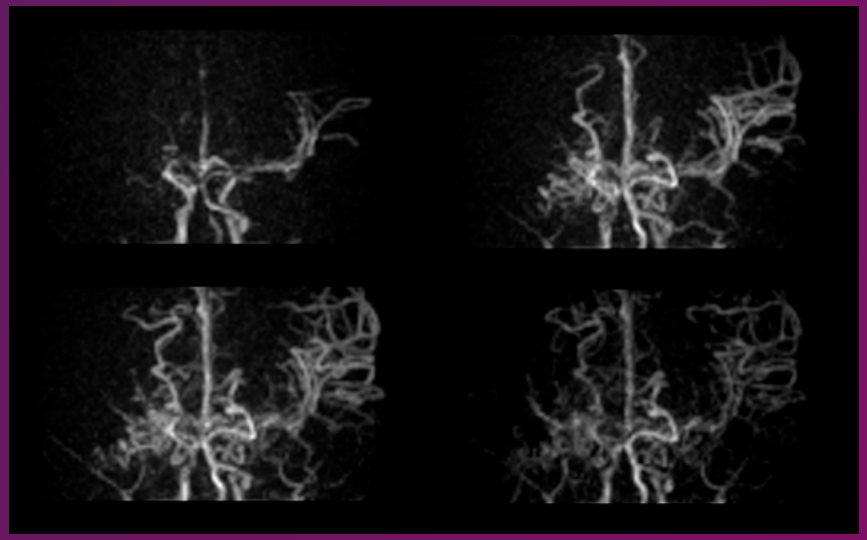
Quantitative T2*, T2 and T1 maps in a single breathhold scan



4D-TRANCE

Contrast-free imaging of brain vascular anatomy

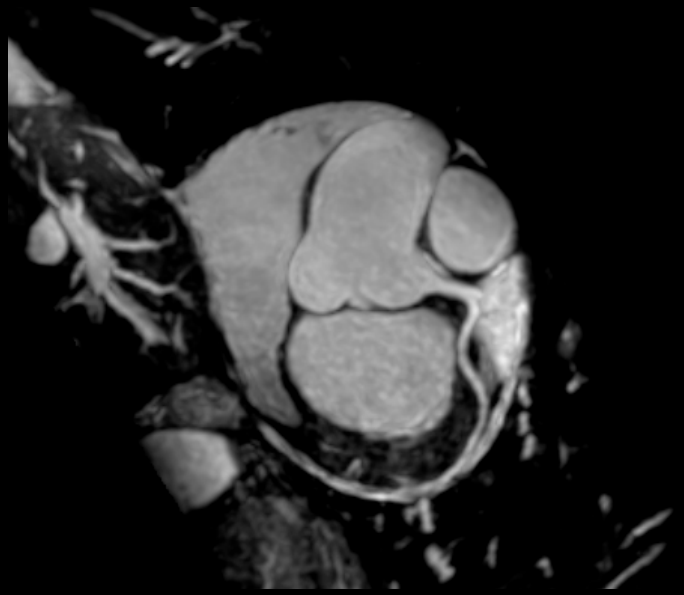
4D-TRANCE is a time-resolved technique for non-contrast angiography, promoting patient comfort and enabling you to evaluate the patency of the vascular anatomy in the brain using endogenous contrast with MIP visualization of multiple phases. 4D-TRANCE enables high temporal resolution down to 160 msec.



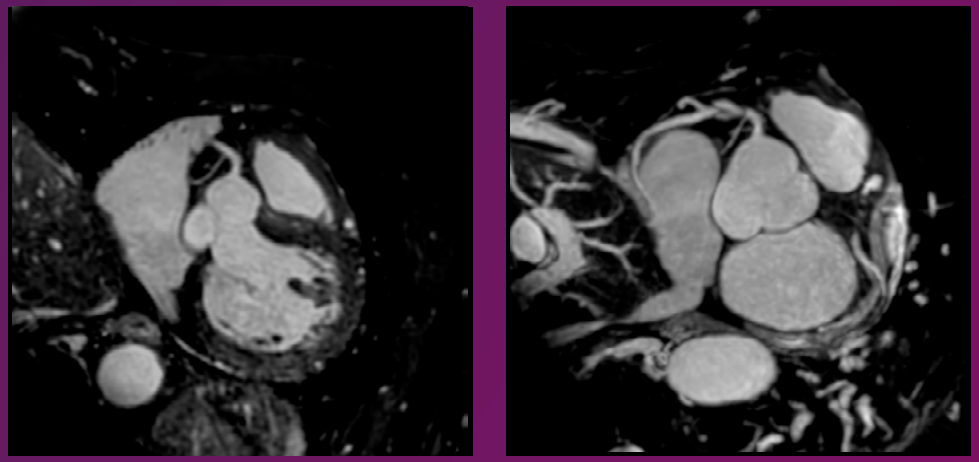
Non-contrast time-resolved MR angiography of the brain

Coronary Acquisition

Perform non-invasive imaging of coronary arteries



Coronary Acquisition allows for non-invasive imaging of coronary arteries by displaying good contrast between myocardium and vessels by deploying 3D sequences combined with MotionTrak respiratory navigators for real-time motion correction and T2-preparation.

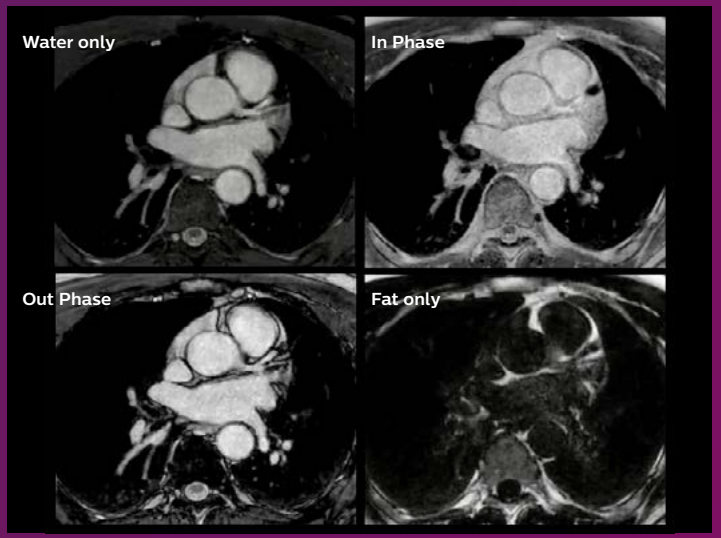


Non-invasive imaging of coronary arteries

mDIXON XD FFE

Fat-free cardiac imaging

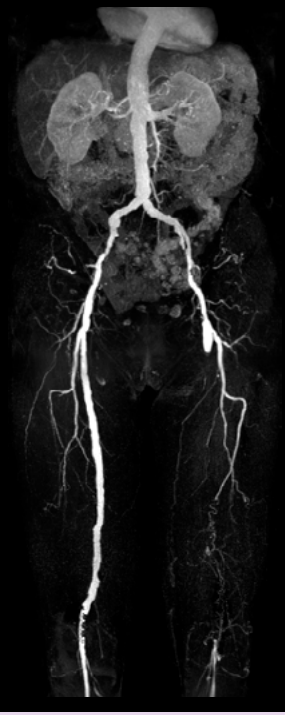
mDIXON XD FFE improves your fat-free imaging for high resolution scans and provides more efficient dynamic scans. With up to four image types in one single scan, including with or without fat suppression contrasts, mDIXON XD FFE will enable you to enhance your imaging strategies by simplifying your cardiac dynamic FFE procedures.



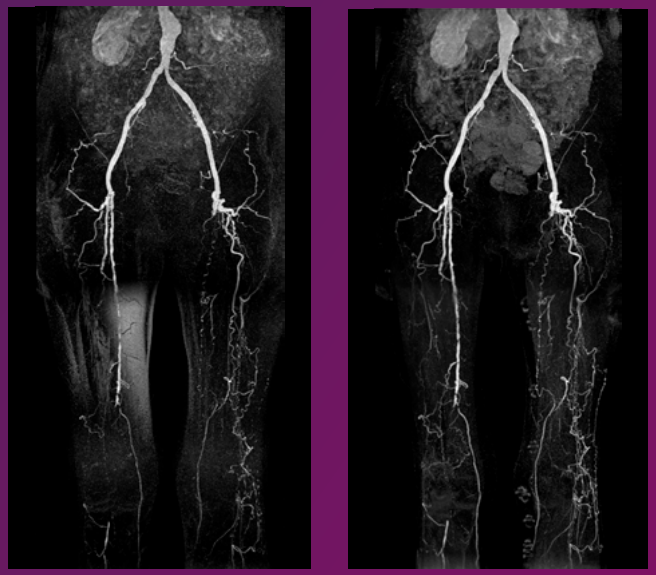
Acquire up to four image types in one single scan

mDIXON XD MultiStation

Non-subtraction peripheral MR Angiography



mDIXON XD MultiStation allows you to perform peripheral MR Angiography with improved vessel-to-background contrast in only one single pass1. You will be able to perform your peripheral MR Angiography acquisitions without the use of a subtraction mask, eliminating artifacts that could arise from misalignment, due to patient motion, between the pre and post contrast scan. Enjoy fast, robust peripheral MR Angiography.



MR Angiography with subtraction (left) and in one single pass (right) with improved vessel-to-background contrast

Additional information:

- Subtraction-less peripheral MR Angiography
- Improved vessel-tobackground contrast by 30-36%[1]

1 As opposed to standard MRA technology relying on the subtraction of a pre and post contrast scan.

www.philips.com/mrclinicalapplications