Integrated **clinical solutions**

MR Workspace and clinical application portfolio
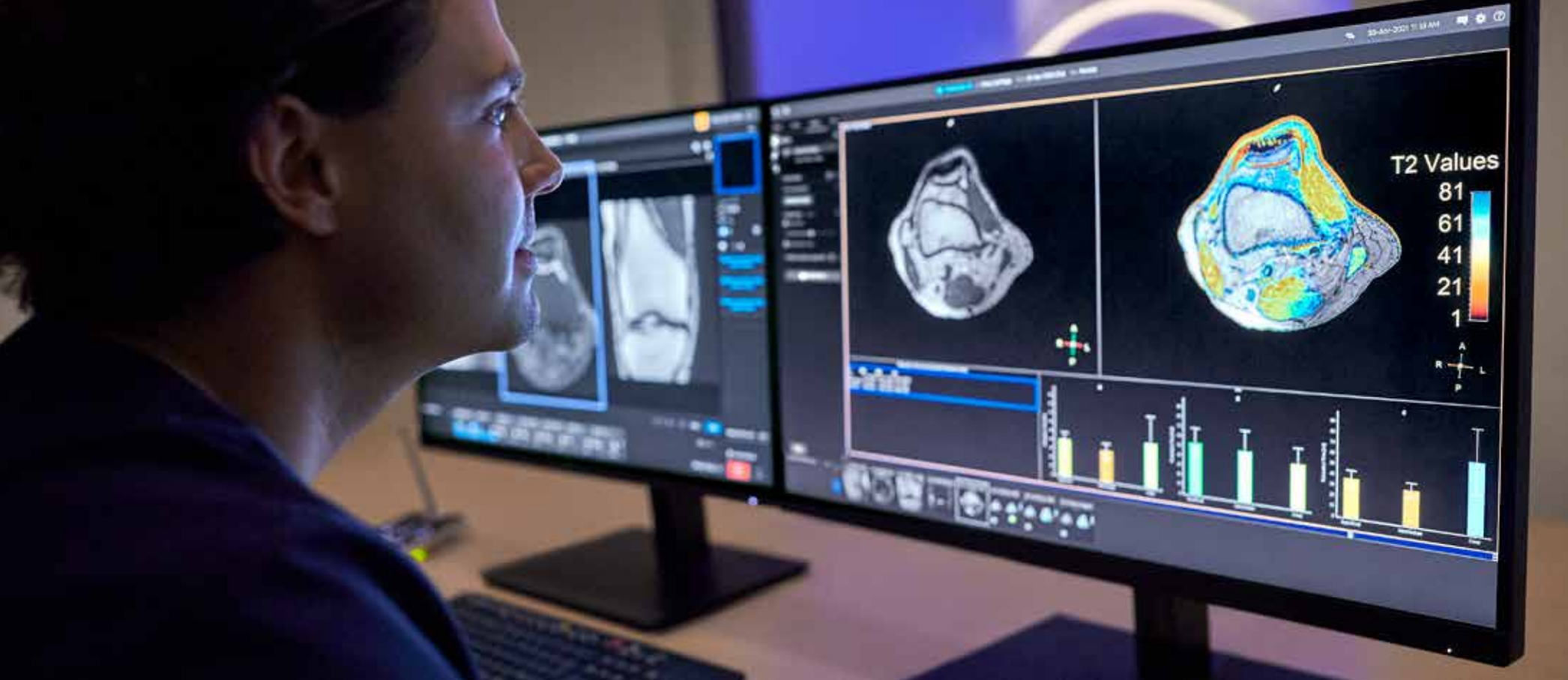
Extending the **power of MR**

For more than 130 years, we have been creating meaningful innovations to improve people's lives and make the world more sustainable. We are inspired to continually advance the state of precision diagnosis with customer- and patient-centric solutions that deliver clear care pathways and predicable outcomes.
In MR, our mission is to achieve a fast, fully automated, and personalized exam for every patient, while acting responsibly towards our planet and society.
With AI*-driven smart connected imaging, optimized workflows, and integrated clinical solutions, we strive to improve MR department's productivity, enhance patient and staff experience, and deliver high quality diagnostic imaging.

Our portfolio of MR clinical solutions can help to break down diagnostic boundaries by delivering speed, comfort and confidence, all with the aim to help improve patient care.

*According to the definition of AI from the EU High-Level Expert Group.

Disclaimer: All products, features and applications described in this brochure are subject to availability depending on country regulatory approvals and system compatibility.

MR Workspace

MR Workspace supports efficiency and staff satisfaction in the control room through intelligence, guidance and ease of use. Technologists can prepare exams before patients arrive and aim to achieve consistent quality regardless of experience, by using Protocol Assistant, an AI[1]-driven solution that learns your protocol preferences and suggests the most appropriate ones based on clinical indication. Advanced visualization includes step-by-step guidance so technologists can begin post-processing, delivering more[2] diagnostic information to the radiologist, thus saving reporting time. The intuitive interface, large display of clinical images and essential parameter reveal contribute to outstanding ease-of-use.

MR Workspace also supports a large collection of clinical application suites. It is the Philips platform of choice for existing and future clinical innovations.

With MR Workspace we aim to support you to:

| Increase schedule efficiency | Deliver consistent image quality | Improve staff experience | Reduce training time | Provide faster time to results |

dS Scan Suite Essential

dS Scan Suite Essential provides comprehensive planning, scanning, processing, viewing, and patient administration tools, as well as data storage and connectivity features. All dS Scan Suite Essential elements support outstanding clinical imaging performance, enhanced workflow, and ease of use.

dS Scan Suite Essential contains fast, high resolution imaging methods for the assessment of morphology of all anatomical areas including brain and spine, MSK, body and breast, cardiac, and various blood vessels with or without contrast agents. The package also includes AutoVoice, a fully integrated and automated solution that guides patients through the MR examination, ComforTone, to reduce acoustic noise and enhance MR patient experience and ScanWise Implant software to help confidently scan patients within the MR Conditional limits by providing step-by-step guidance.
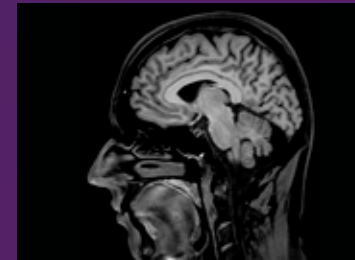
ScanTools Pro
Clinical imaging performance

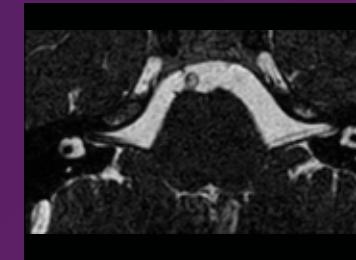**AutoVoice**
Guiding your patients through the MR examination

ComforTone
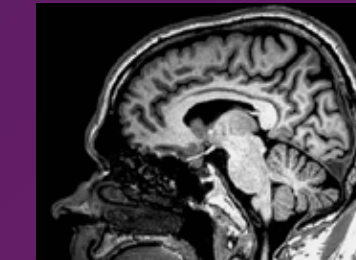Reduce acoustic noise and enhance MR experience

ScanWise Implant
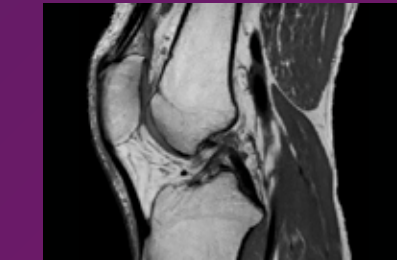A key to confidence with MR Conditional implants

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

bFFE XD
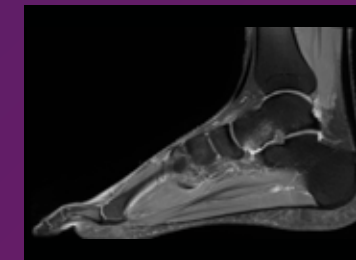Expanding clinical applications of balanced FFE

3D Non-selective
Fast and robust large volume 3D FFE imaging

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

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

**2k imaging**
High resolution imaging

AV MR Essential

AV MR Essential package consolidates the oncology and neurology related routine advanced visualization capabilities, required to complete day to day AV work seamlessly.

MR MobiView allows for easy viewing of multi-station studies by fusing images in the head-feet direction. MR Subtraction enables basic calculations between two volumes, within a single dynamic series. MR Diffusion evaluates DWI series to generate parametric maps such as ADC, eADC, fractional anisotropy, axial diffusivity or radial diffusivity. MR T1 Perfusion is designed to evaluate time intensity curves of a T1 signal enhancement series. The application produces measurements including relative enhancement, maximum enhancement, time to peak (TTP), and wash-in/wash-out rates. MR Echo Accumulation enables the calculation of new images based on the selected sum of echo times of series with multiple echoes. The processing provides interactive update of the results.
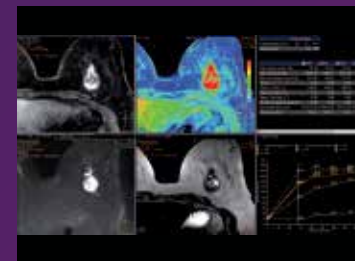

MR MobiView
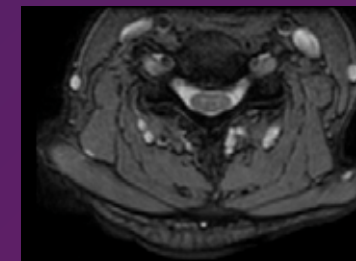Easy viewing of multi-station studies
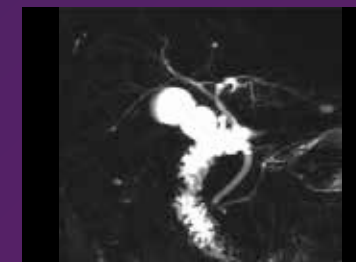
MR Subtraction
Basic calculations within a dynamic series
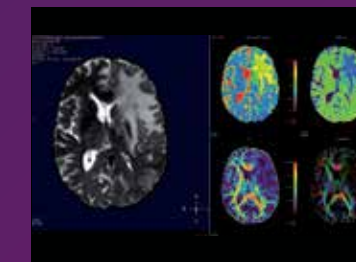
MR Diffusion
Analyze diffusion properties and generate parametric maps

MR T1 Perfusion
Evaluate time intensity curves

MR Echo Accumulation
Calculation of new images based on series with multiple echoes

SmartExams
Plus

The SmartExams Plus bundle includes intelligent software which automatically plans the scanning geometries for Brain and Spine, delivering reproducible planning results. Based on validated scanning preferences, automated geometry planning can be shared and applied across Philips MRI consoles, helping to standardize exams for consistent MRI results.
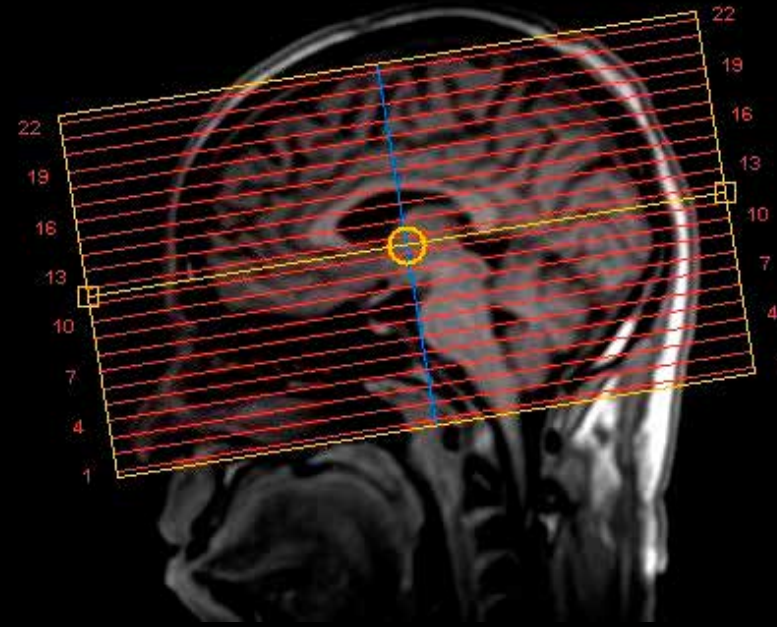

SmartExam Brain
Standardized exams forconsistent MRI results

SmartExam Spine
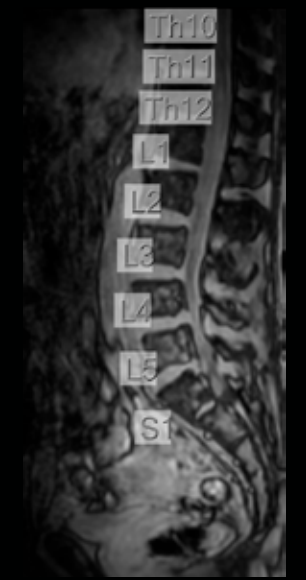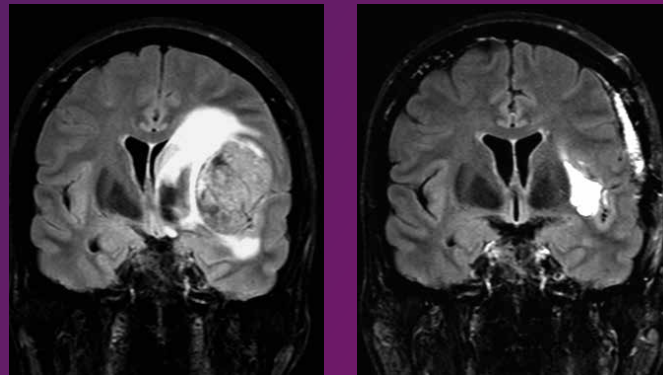Standardized exams for consistent MRI results

SmartExam Brain

Standardized exams for consistent MRI results

SmartExam[1] Brain 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.
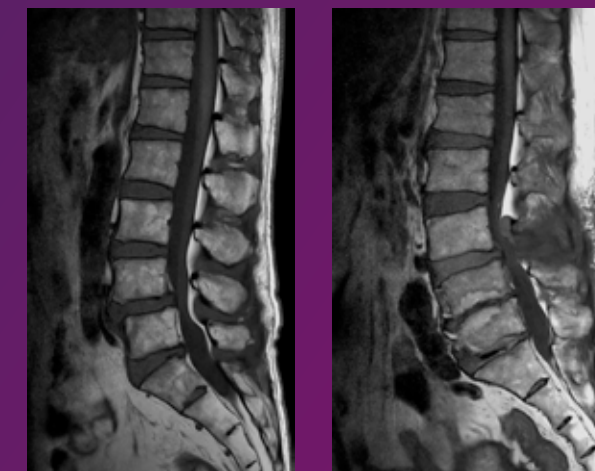

Enhanced consistency in follow-up exams

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.

SmartExam Spine

Standardized exams for consistent MRI results

SmartExam Spine[1] 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.
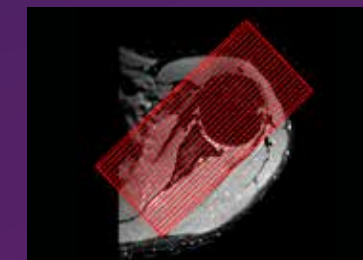

Consistent reading for any patient

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.

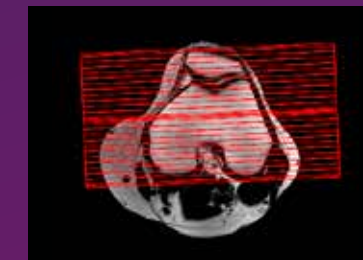· Automated geometry planning can be shared and applied across Philips MRI consoles.

SmartExams
Pro

The SmartExams Pro bundle includes intelligent software which automatically plans the scanning geometries for Shoulder and Knee, delivering reproducible planning results. Based on validated scanning preferences, automated geometry planning can be shared and applied across Philips MRI consoles, helping to standardize exams for consistent MRI results.
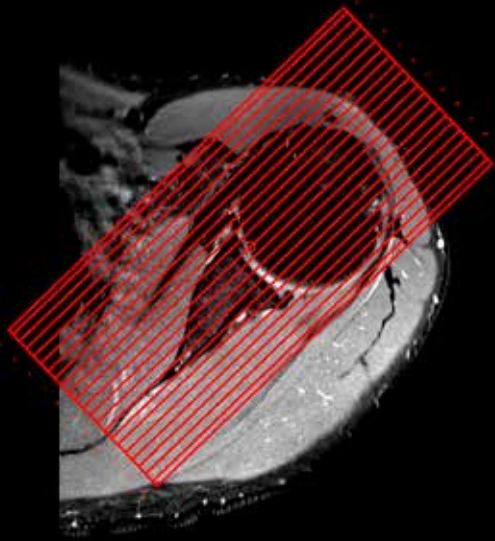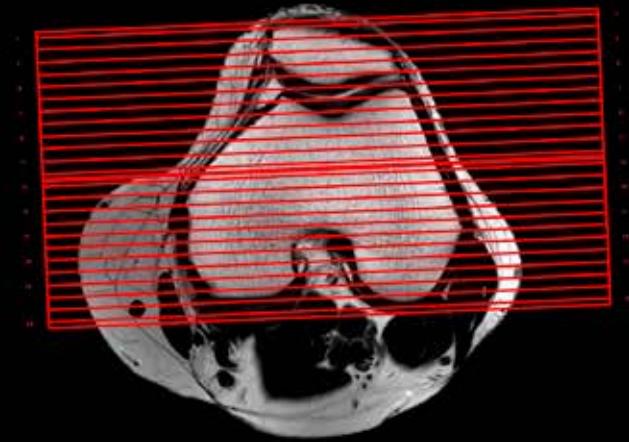
SmartExam Shoulder
Standardized exams for consistent MRI results

SmartExam Knee
Standardized exams for consistent MRI results

SmartExam Shoulder
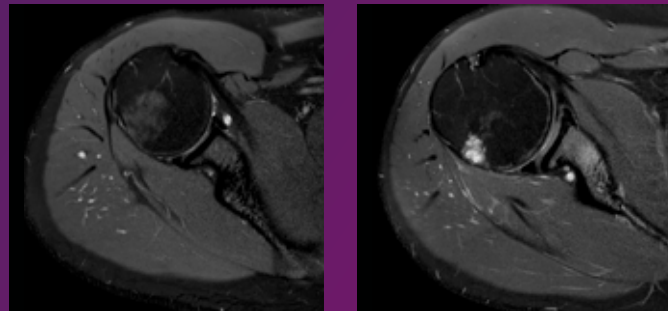
Standardized exams for consistent MRI results

SmartExam Shoulder[1] 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.
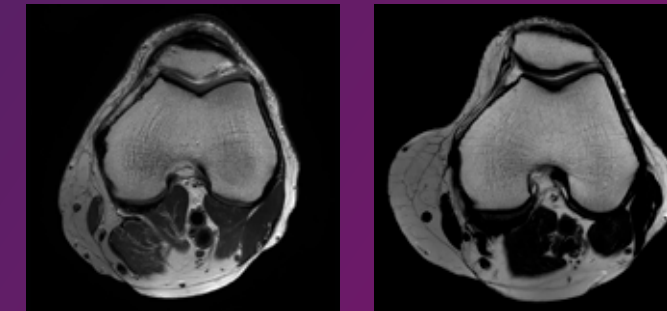
Consistent reading for any patient

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.

SmartExam Knee

Standardized exams for consistent MRI results

SmartExam Knee[1] 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 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.

Smart WorkFlow
Plus

The Smart Workflow Plus bundle includes workflow enhancements in both the exam room and the control room.

VitalScreen (unilateral) is an interactive touchscreen on the magnet façade, providing guidance and insights on the details of the current patient study.

SmartExam Brain assists in delivering reproducible planning results by using intelligent software.
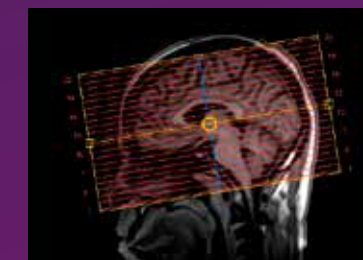
VitalScreen
Guidance at your fingertips

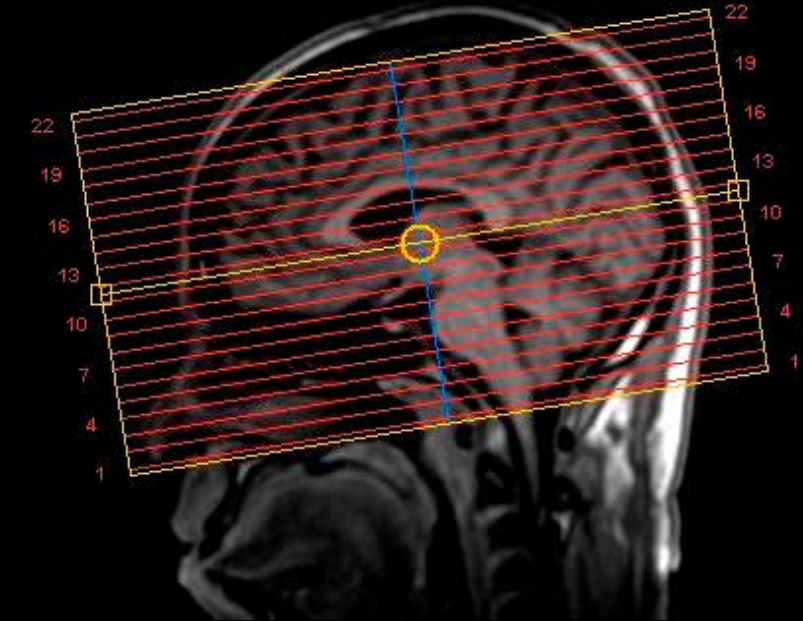**SmartExam Brain**
Standardized exams
forconsistent MRI results

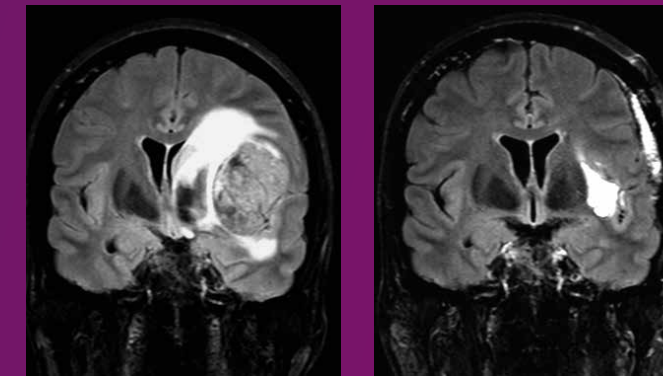# VitalScreen

Guidance at your fingertips

VitalScreen (unilateral) offers guidance and insights on the details of the current patient study. This unilateral 12-inch interactive touchscreen provides information on exam duration, which coil to use, patient positioning, physiology signal captors (VCG & respiratory) and – if applicable – contrast usage and breath-hold guidance. Moreover, with VitalScreen (unilateral), the patient position can be easily adjusted and the exam can be started at the patient's side with a single touch. When the door of the exam room is closed, scanning will start instantaneously using SmartStart.

Additional information:

· All information and guidance at a glance without the need to navigate between tabs.

· With only one click, the position of the patient can be switched from head-first to feet-first or vice versa.

· Detailed information about contrast injection protocols is readily available through display on VitalScreen (unilateral).

· As soon as the exam-room door is closed, SmartStart automatically starts the scanning procedure.

SmartExam Brain

Standardized exams for consistent MRI results

SmartExam[1] Brain 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.

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.

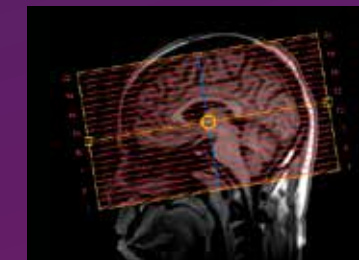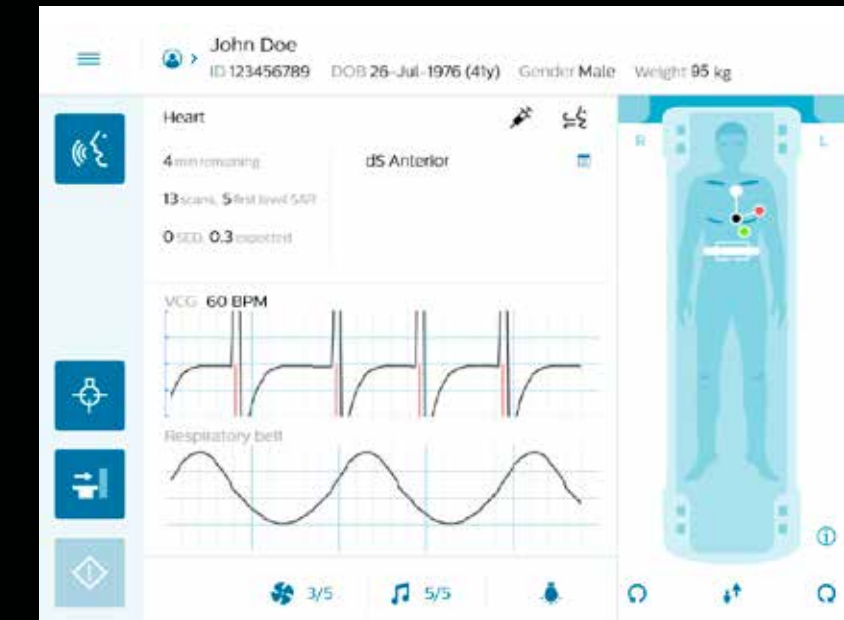1 SmartExam is not available to patients with MR Conditional implants.

Smart WorkFlow
Pro

The Smart Workflow Pro bundle includes workflow enhancements in both the exam room and the control room.

VitalScreen are two interactive touch screens on the magnet façade, providing guidance and insights on the details of the current patient study. SmartExam Brain and Spine assist in delivering reproducible planning results by using intelligent software.

VitalScreen
Guidance at your fingertips

SmartExam Brain
Standardized exams forconsistent MRI results

SmartExam Spine
Standardized exams for consistent MRI results

VitalScreen

Guidance at your fingertips

VitalScreen offers guidance and insights on the details of the current patient study. These two 12-inch interactive touchscreens provide information on exam duration, which coil to use, patient positioning, physiology signal captors (VCG & respiratory) and – if applicable – contrast usage and breath-hold guidance. Moreover, with VitalScreen, the patient position can be easily adjusted and the exam can be started at the patient's side with a single touch. When the door of the exam room is closed, scanning will start instantaneously using SmartStart.

Additional information:

· All information and guidance at a glance without the need to navigate between tabs.

· With only one click, the position of the patient can be switched from head-first to feet-first or vice versa.

· Detailed information about contrast injection protocols is readily available through display on VitalScreen.

· As soon as the exam-room door is closed, SmartStart automatically starts the scanning procedure.
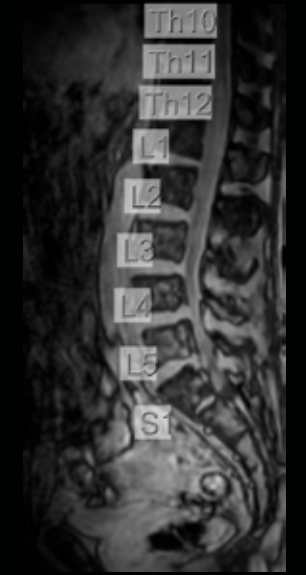
SmartExam Brain

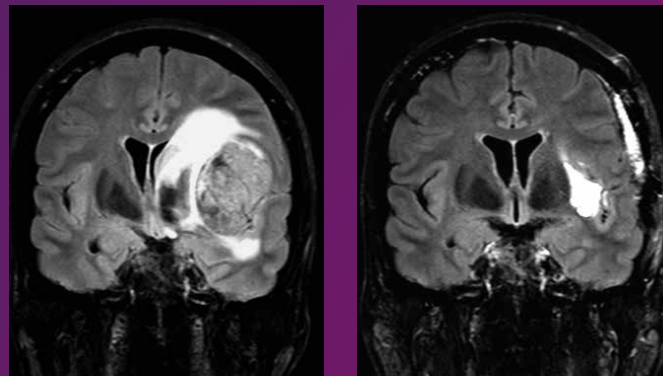# Standardized exams for consistent MRI results

SmartExam[1] Brain 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.
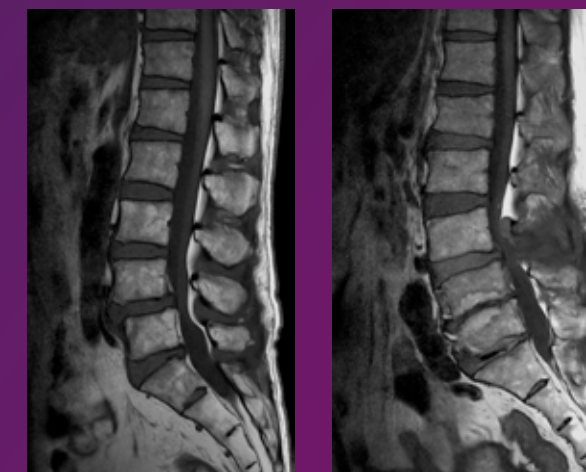

Enhanced consistency in follow-up exams

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.

SmartExam Spine

Standardized exams for consistent MRI results

SmartExam Spine[1] 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 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.

Smart
WorkFlow
Premium

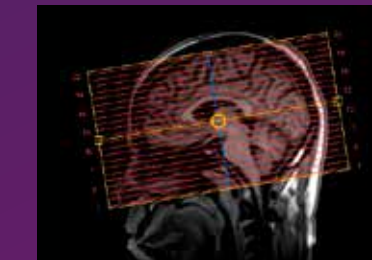The Smart Workflow Premium bundle includes workflow enhancements in both the exam room and the control room.

VitalScreen are two interactive touch screens on the magnet façade, providing guidance and insights on the details of the current patient study. VitalEye touchless patient sensing and AI provide a fast and automated detection of patient's breathing patterns without any operator interaction. SmartExam Brain, Spine, Shoulder and Knee assist in delivering reproducible planning results by using intelligent software.

VitalScreen
Guidance at your fingertips

VitalEye
Touchless respiratory-triggering

SmartExam Brain
Standardized exams forconsistent MRI results

SmartExam Spine
Standardized exams for consistent MRI results

SmartExam Shoulder
Standardized exams for consistent MRI results

SmartExam Knee
Standardized exams for consistent MRI results

VitalScreen

Guidance at your fingertips

VitalScreen offers guidance and insights on the details of the current patient study. These two 12-inch interactive touchscreens provide information on exam duration, which coil to use, patient positioning, physiology signal captors (VCG & respiratory) and – if applicable – contrast usage and breath-hold guidance. Moreover, with VitalScreen, the patient position can be easily adjusted and the exam can be started at the patient's side with a single touch. When the door of the exam room is closed, scanning will start instantaneously using SmartStart.

Additional information:

· All information and guidance at a glance without the need to navigate between tabs.

· With only one click, the position of the patient can be switched from head-first to feet-first or vice versa.

· Detailed information about contrast injection protocols is readily available through display on VitalScreen.

· As soon as the exam-room door is closed, SmartStart automatically starts the scanning procedure.

VitalEye

Touchless respiratory-triggering

VitalEye touchless patient sensing and AI provide a fast and automated detection of patient's breathing patterns without any operator interaction. Technologist receives a continuous and robust respiratory signal without any interaction, helping to keep a caring eye on the patient. The quality of the physiology signal detected by VitalEye is better than a belt-based approach[1] providing superior image quality, for a broad range of patient sizes.

Additional information:

· Technologist no longer needs to set up an old-fashioned respiratory belt.

· Uses adaptive intelligence to detect even the tiniest microscopic signs of breathing.

· Advanced algorithms analyze up to 50 body locations parallel and in real time.

· Produces a respiratory trace that is more robust compared to traditional respiratory triggering methods[1].

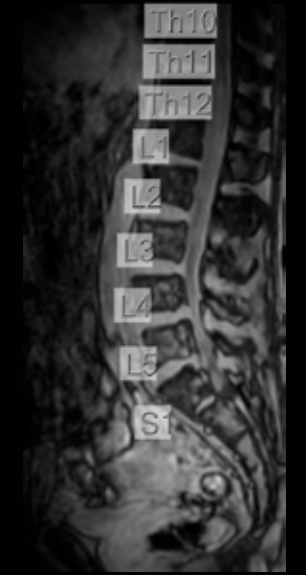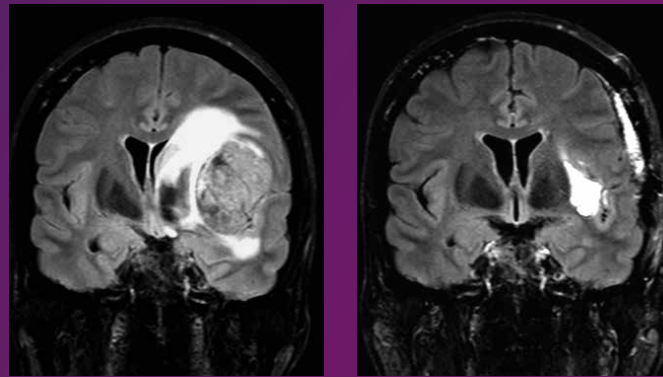1. Requires an unobstructed line-of-sight.

SmartExam Brain

Standardized exams for consistent MRI results

SmartExam[1] Brain 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.
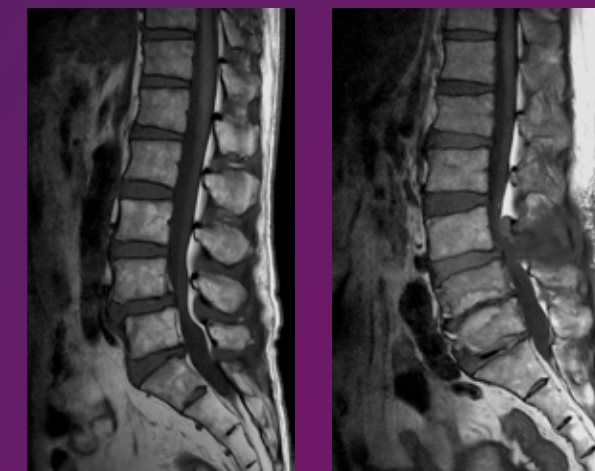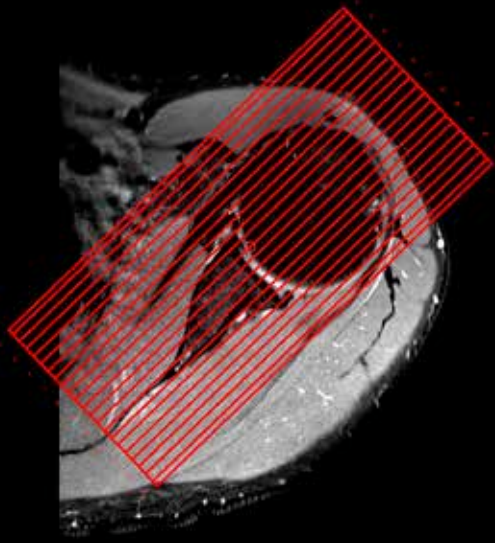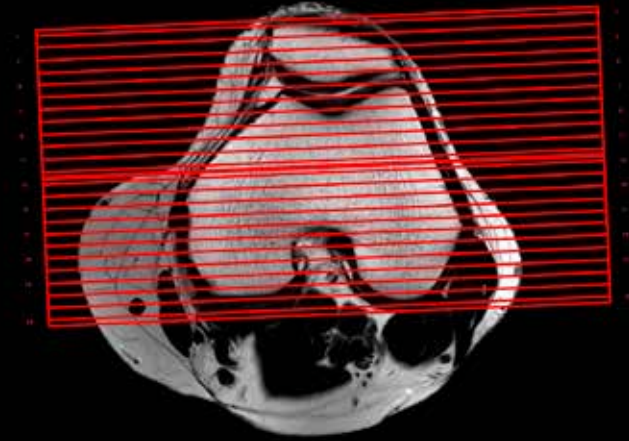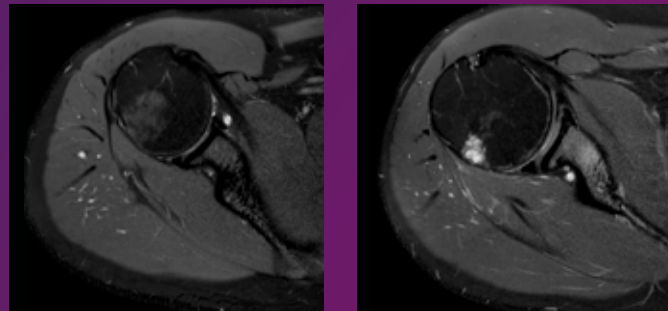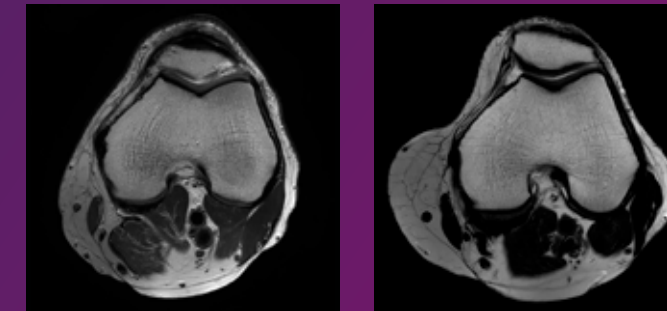

Enhanced consistency in follow-up exams

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.

SmartExam Spine

Standardized exams for consistent MRI results

SmartExam Spine[1] 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 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.

SmartExam Shoulder

Standardized exams for consistent MRI results

SmartExam Shoulder[1] 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 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.

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SmartExam Knee

Standardized exams for consistent MRI results

SmartExam Knee[1] 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 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.

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SmartSpeed
Plus

SmartSpeed Plus brings greater speed and image quality to MSK and neuro/spine imaging via a unique speed engine and AI technology at the source, plus provides SmartSpeed MotionFree, SmartSpeed Implant, and SmartSpeed DWI for robust imaging. Enjoy all the benefits of fast, high quality and robust imaging for Neuro & MSK.

SmartSpeed Neuro/Spine
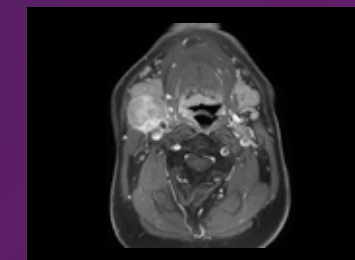
SmartSpeed MSK

SmartSpeed MotionFree
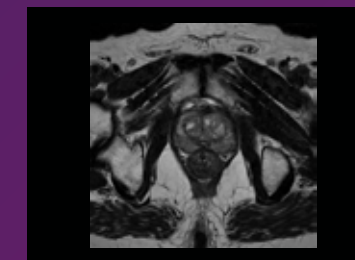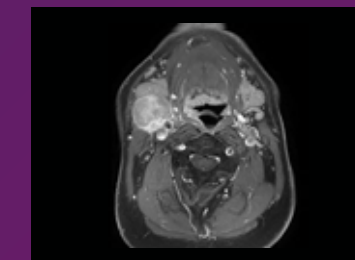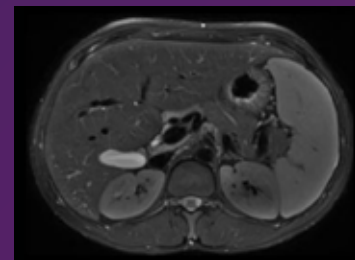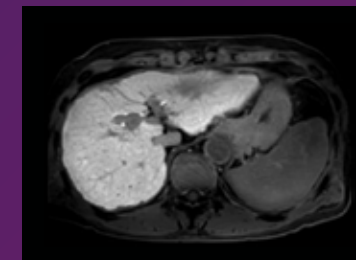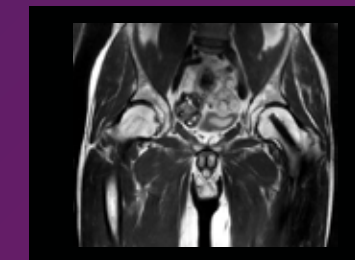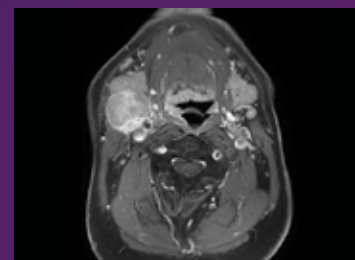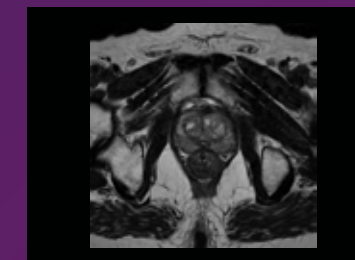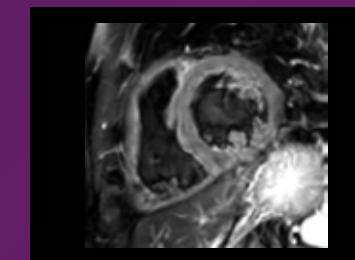

SmartSpeed Implant
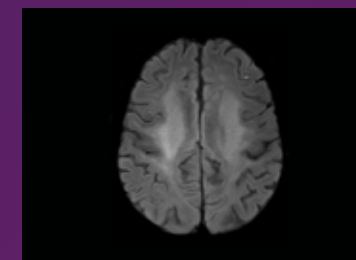
SmartSpeed DWI

SmartSpeed
Pro Body

SmartSpeed Pro Body brings greater speed and image quality to body, neuro/spine and MSK imaging via a unique speed engine and AI technology at the source. In addition to robust imaging solutions provided by SmartSpeed Plus, SmartSpeed Pro Body also includes options designed specifically for the challenges of body imaging: SmartSpeed MotionFree Body, SmartSpeed 3D FreeBreathing, and SmartSpeed DWI Body. Enjoy all the benefits of fast, high quality and robust imaging for Body, Neuro & MSK.
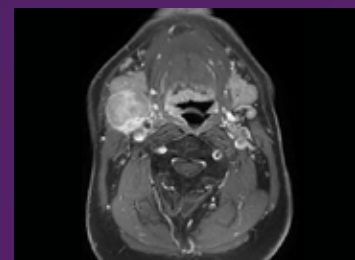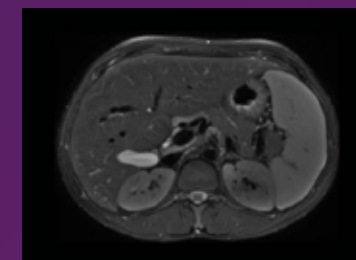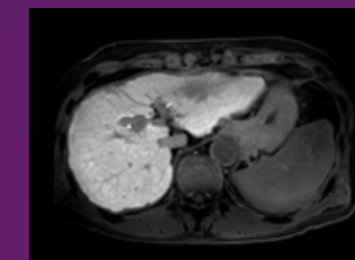

SmartSpeed Neuro/Spine

SmartSpeed MSK

SmartSpeed Body


SmartSpeed MotionFree

SmartSpeed MotionFree Body

SmartSpeed 3D FreeBreathing

SmartSpeed Implant
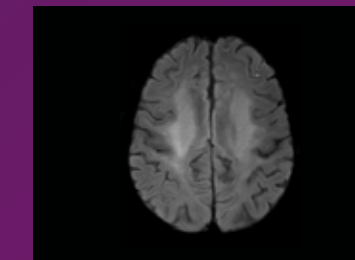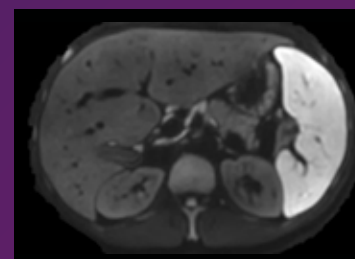
SmartSpeed DWI

SmartSpeed DWI Body

SmartSpeed
Pro Cardiac

SmartSpeed Pro Cardiac brings greater speed and image quality to cardiac, neuro/spine and MSK imaging, in addition to robust imaging solutions SmartSpeed MotionFree, SmartSpeed Implant, and SmartSpeed DWI options. Enjoy all the benefits of fast, high quality and robust imaging for Cardiac, Neuro & MSK.

SmartSpeed Neuro/Spine
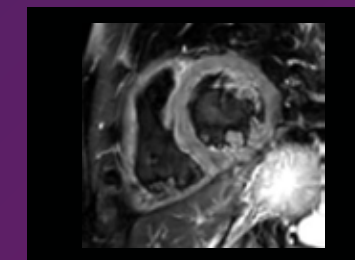
SmartSpeed MSK

SmartSpeed Cardiac

SmartSpeed MotionFree

SmartSpeed Implant
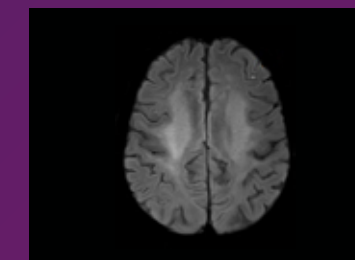
SmartSpeed DWI

SmartSpeed
Premium

SmartSpeed Premium delivers the advantages of SmartSpeed for cardiac, body, neuro/spine and MSK imaging. This premium package brings you the full complement of SmartSpeed technology powered by AI to elevate your MR imaging to the highest level.

SmartSpeed Neuro/Spine

SmartSpeed MSK

SmartSpeed Body

SmartSpeed Cardiac

SmartSpeed MotionFree

SmartSpeed MotionFree Body

SmartSpeed 3D FreeBreathing
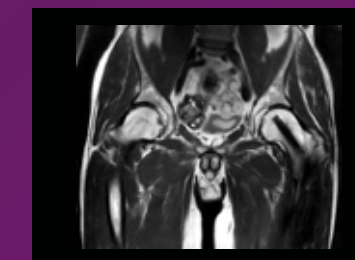
SmartSpeed Implant
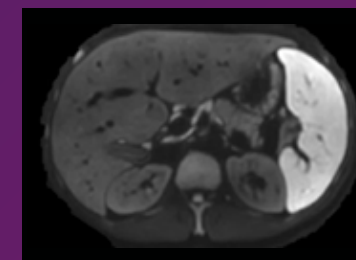
SmartSpeed DWI

SmartSpeed DWI Body

SmartSpeed Neuro/Spine
Image quality and speed without compromise

Philips SmartSpeed delivers image quality and speed at your fingertips. It utilizes the Compressed SENSE speed engine to reduce scan time and an award-winning AI algorithm applied directly to maximize information and deliver outstanding image quality to brain and spine imaging. Philips SmartSpeed can be used in 2D and 3D and for all anatomical contracts. It supports 97% of current clinical MR protocols[1] to address the imaging needs of the vast majority of the patients.

Fast imaging of the spine

Additional information:

· Up to 3 times faster with no loss in image quality[2]

· Up to 65% higher resolution and improved SNR[2]

· Improve your productivity with reduced exam time without losing image quality

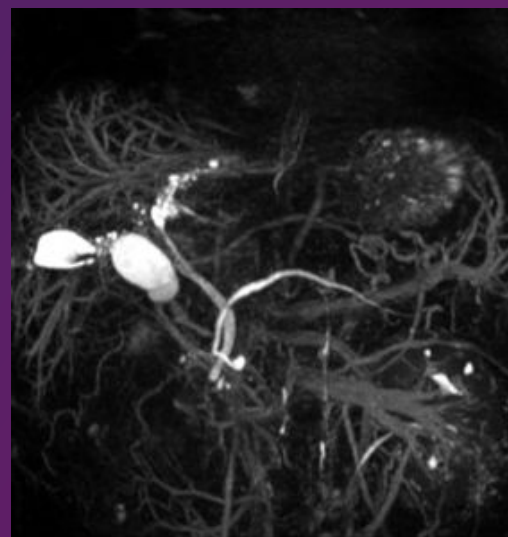· Improve signal to noise ratio for challenging anatomies

1 On average, measured across a sample of sites from Philips MR installed
2 Compared to Philips SENSE

SmartSpeed MSK
Image quality and speed without compromise

Philips SmartSpeed delivers image quality and speed at your fingertips. It utilizes the Compressed SENSE speed engine to reduce scan time and an award-winning AI algorithm applied directly at the beginning of the MR reconstruction chain to maximize information and deliver outstanding image quality to MSK imaging. Philips SmartSpeed can be used in 2D and 3D and for all anatomical contracts. It supports 97% of current clinical MR protocols1 to address the imaging needs of the vast majority of the patients.
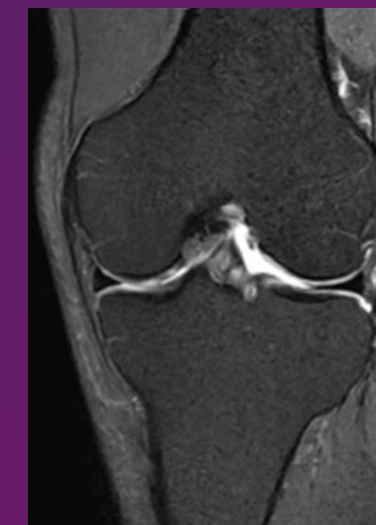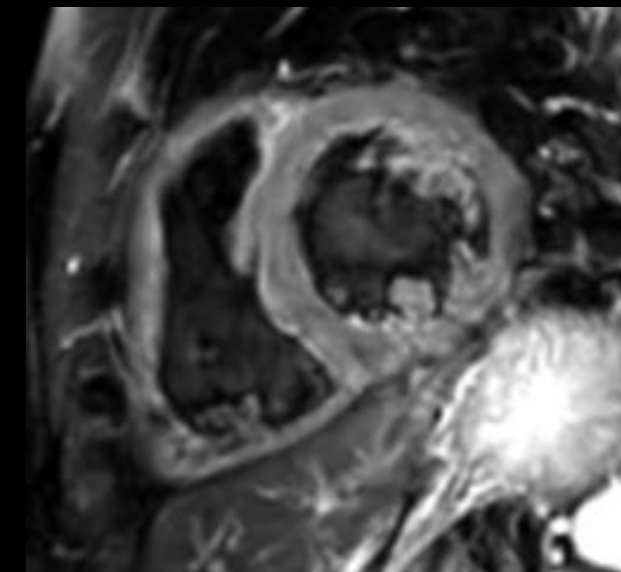
Fast imaging of the knee

Additional information:

· Up to 3 times faster with no loss in image quality[2]

· Up to 65% higher resolution and improved SNR[2]

· Improve your productivity with reduced exam time without losing image quality

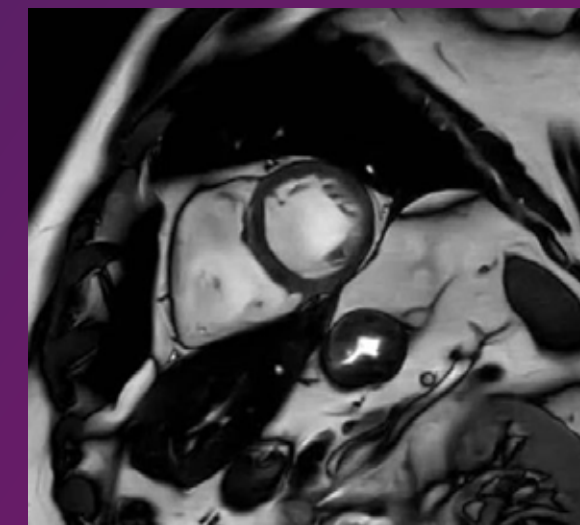· Improve signal to noise ratio for challenging anatomies

1 On average, measured across a sample of sites from Philips MR installed
2 Compared to Philips SENSE

SmartSpeed Body
Image quality and speed without compromise

Philips SmartSpeed delivers image quality and speed at your fingertips. It utilizes the Compressed SENSE speed engine to reduce scan time and an award-winning AI algorithm applied directly at the beginning of the MR reconstruction chain to maximize information and deliver outstanding image quality to body imaging. Philips SmartSpeed can be used in 2D and 3D and for all anatomical contracts. It supports 97% of current clinical MR protocols1 to address the imaging needs of the vast majority of the patients.

High quality 3D MRCP imaging

Additional information:

· Up to 3 times faster with no loss in image quality[2]

· Up to 65% higher resolution and improved SNR[2]

· Improve your productivity with reduced exam time without losing image quality

· Improve signal to noise ratio for challenging anatomies

1 On average, measured across a sample of sites from Philips MR installed
2 Compared to Philips SENSE

46

SmartSpeed Cardiac
Image quality and speed without compromise

Philips SmartSpeed delivers image quality and speed at your fingertips. It utilizes the Compressed SENSE speed engine to reduce scan time and an award-winning AI algorithm applied directly at the beginning of the MR reconstruction chain to maximize information and deliver outstanding image quality to cardiac imaging. Philips SmartSpeed can be used in 2D and 3D and for all anatomical contracts. It supports 97% of current clinical MR protocols1 to address the imaging needs of the vast majority of the patients.
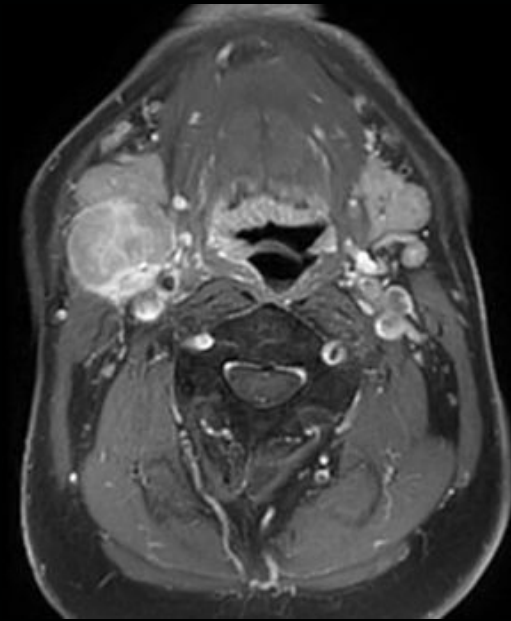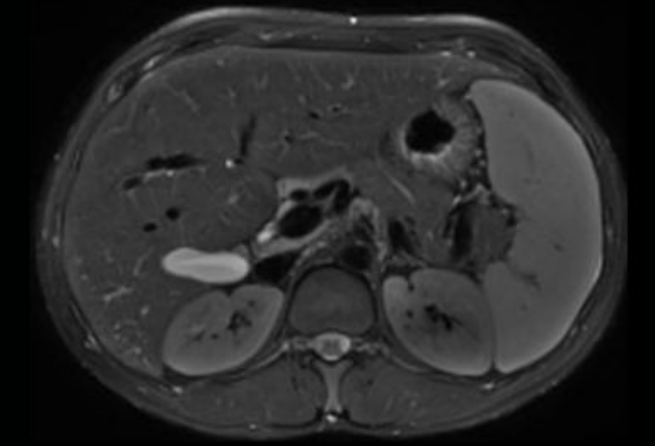

Fast cardiac cine imaging

Additional information:

· Up to 3 times faster with no loss in image quality[2]

· Up to 65% higher resolution and improved SNR[2]

· Improve your productivity with reduced exam time without losing image quality

· Improve signal to noise ratio for challenging anatomies

1 On average, measured across a sample of sites from Philips MR installed
2 Compared to Philips SENSE

47

SmartSpeed MotionFree
Image quality and speed without compromise

Philips SmartSpeed delivers fast high-quality imaging for wider range of patients including patients who are in pain, struggling to hold still. Philips SmartSpeed MotionFree utilizes non-Cartesian, motion robust 2D imaging techniques to acquire fast, motion-free images. It reduces gross motion, breathing motion and pulsatility artifacts in over 90% of the cases compared to Cartesian imaging.
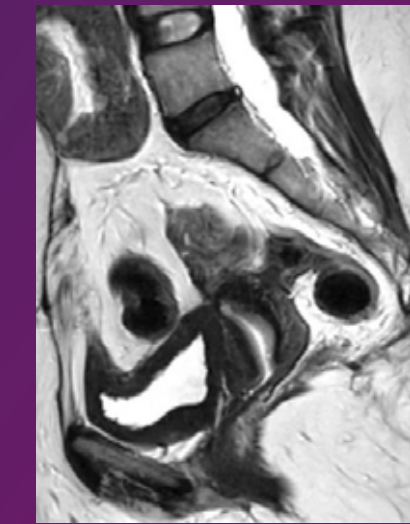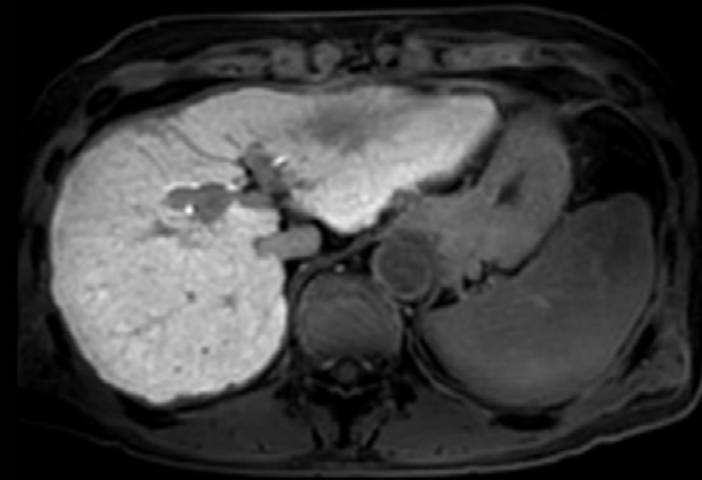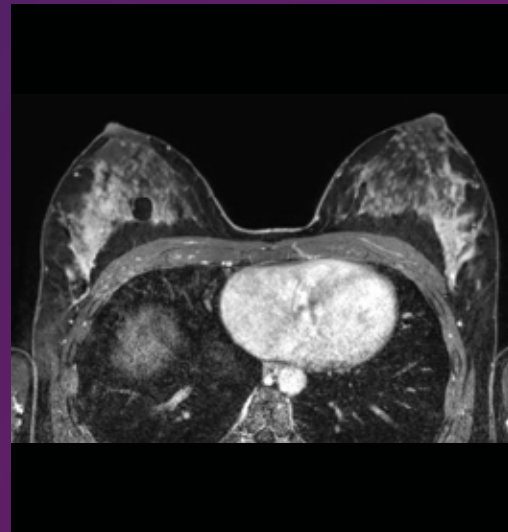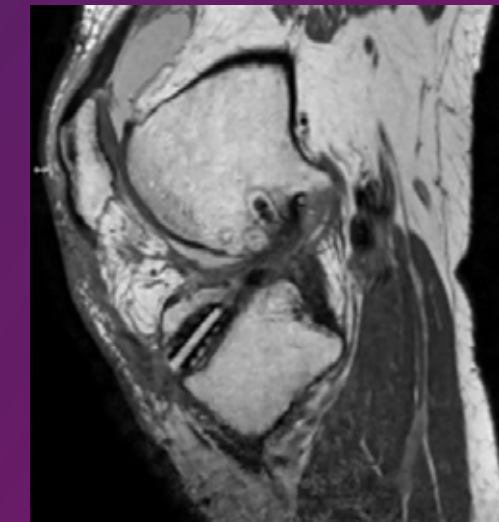

Motion free neck imaging

Additional information:

- Up to 3 times faster with no loss in image quality[1]

- Up to 65% higher resolution and improved SNR[1]

- Improve your productivity with reduced exam time without losing image quality

- Improve signal to noise ratio for challenging anatomies

SmartSpeed MotionFree Body
Image quality and speed without compromise

Philips SmartSpeed delivers fast high-quality imaging for wider range of patients including patients who are in pain, struggling to hold still. Philips SmartSpeed MotionFree utilizes non-Cartesian, motion robust 2D imaging techniques to acquire fast, motion-free body images. It reduces gross motion, breathing motion and pulsatility artifacts in over 90% of the cases compared to Cartesian imaging.

High quality pelvis imaging
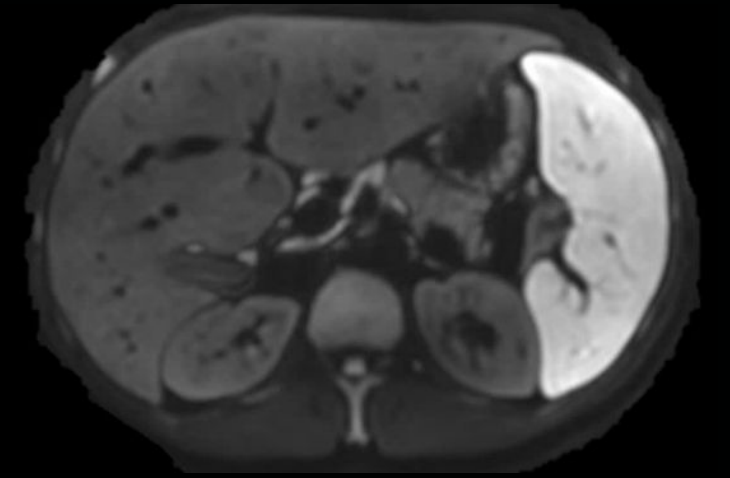
Additional information:

- Up to 3 times faster with no loss in image quality[2]

- Up to 65% higher resolution and improved SNR[2]

- Improve your productivity with reduced exam time without losing image quality

- Improve signal to noise ratio for challenging anatomies

SmartSpeed 3D FreeBreathing
Image quality and speed without compromise

Philips SmartSpeed delivers fast high-quality imaging for wide range of patients including patients who struggling to hold their breath during the exam. Philips SmartSpeed 3DFreeBreathing helps to acquire ultra-fast, high-quality imaging with reduced artifacts[1]. It allows the acquisition of 3D T1-weighted gradient echo scans without the need for breath holding. It is intrinsically robust for motion artifacts that can originate from breathing, peristaltic motion.

Fewer artifacts in breast imaging

Additional information:

- Up to 3 times faster with no loss in image quality[2]

- Up to 65% higher resolution and improved SNR[2]

- Improve your productivity with reduced exam time without losing image quality

- Improve signal to noise ratio for challenging anatomies

1 Compared to Philips 3D Vane XD
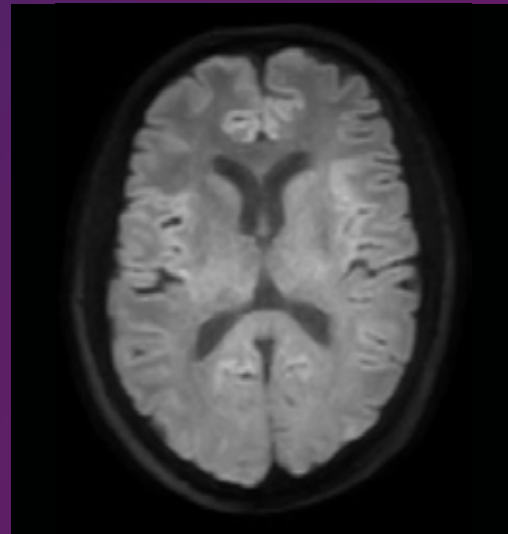2 Compared to Philips SENSE

SmartSpeed Implant
Image quality and speed without compromise

Philips SmartSpeed delivers image quality and speed at your fingertips including patients with implants. Performing musculoskeletal (MSK) imaging in patients with implants is challenging. With the introduction of technologies such as Orthopedic Metal Artifact Reduction (O-MAR XD), image quality has substantially improved. However, scan times are longer. With Philips SmartSpeed Implant, the technology of O-MAR XD is integrated in the Philips SmartSpeed Engine to reduce the scan time of the non-Cartesian sequences significantly[1].

Fast imaging in the presence of Conditional implants

Additional information:

- Up to 3 times faster with no loss in image quality[2]

- Up to 65% higher resolution and improved SNR[2]

- Improve your productivity with reduced exam time without losing image quality

- Improve signal to noise ratio for challenging anatomies

1 Compared to Philips O-MAR XD
2 Compared to Philips SENSE

SmartSpeed DWI
Image quality and speed without compromise

Philips SmartSpeed delivers image quality and speed at your fingertips. By nature, DWI scans have a low signal-to-noise ratio (SNR) as the signal has decayed by the applied diffusion encoding gradients. To have an adequate image quality multiple diffusion directions are involved which can take a considerable amount of time. With Philips SmartSpeed Diffusion the technology of DWI is integrated in the Philips SmartSpeed Engine to reduce the scan time and improve the SNR of individual diffusion-weighted imaging measurements[1].

High quality diffusion TSE imaging

Additional information:

- Up to 3 times faster with no loss in image quality[2]

- Up to 65% higher resolution and improved SNR[2]

- Improve your productivity with reduced exam time without losing image quality

- Improve signal to noise ratio for challenging anatomies

1 Compared to Philips DWI
2 Compared to Philips SENSE

SmartSpeed DWI Body
Image quality and speed without compromise

Philips SmartSpeed delivers image quality and speed at your fingertips. By nature, DWI scans have a low signal-to-noise ratio (SNR) as the signal has decayed by the applied diffusion encoding gradients. To have an adequate image quality multiple b-values, directions and averages are involved which can take a considerable amount of time. With Philips SmartSpeed Diffusion the technology of DWI is integrated in the Philips SmartSpeed Engine to reduce the scan time and improve the SNR of individual diffusion-weighted imaging measurements[1].
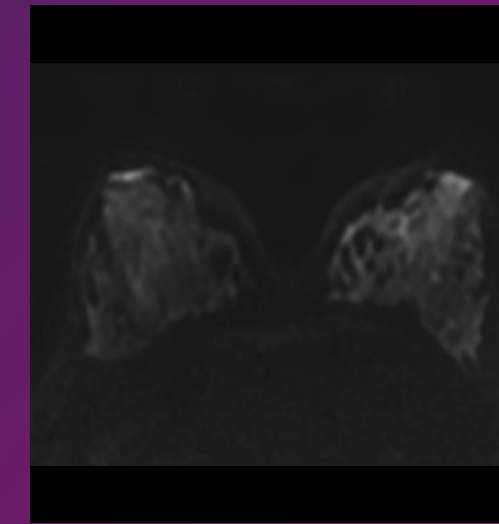
High quality DWI breast imaging

Additional information:

- Up to 3 times faster with no loss in image quality[2]

- Up to 65% higher resolution and improved SNR[2]

- Improve your productivity with reduced exam time without losing image quality

- Improve signal to noise ratio for challenging anatomies

1 Compared to Philips DWI
2 Compared to Philips SENSE

dS IQ Suite
Plus

The dS IQ Suite Plus bundle includes software applications for motion control and fat free performance TSE scans.

MultiVane XD delivers high resolution diagnostic images in short scan times, even in the case of severe patient motion. 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.
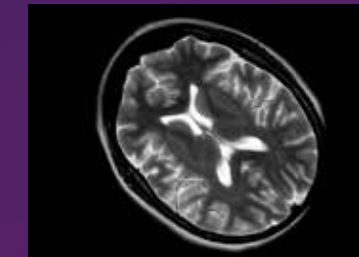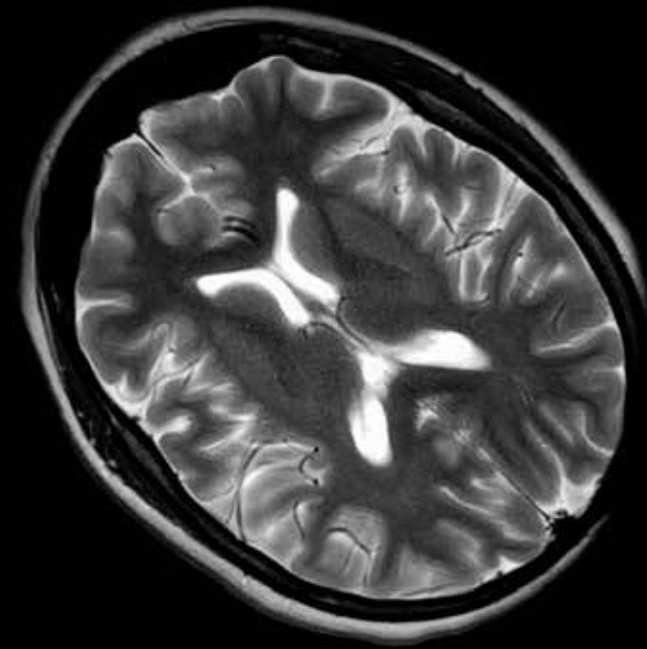

MultiVane XD
Motion-free imaging in short scan time
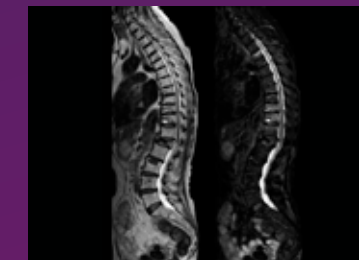
mDIXON XD TSE
Replace all your FatSat by one single fat-free imaging solution

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

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 Compared to Multivane, thanks to compatibility with dS SENSE.

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.

dS IQ Suite
Pro

The dS IQ Suite Pro bundle includes software applications to improve fat-free imaging performance and to perform free breathing abdominal imaging.

mDIXON XD FFE provides more efficient fat-free imaging in routine scan times with up to four image types in one single scan. 3D VANE XD supports imaging of the abdomen without the need for the patient to hold their breath, helping to reduce motion artifacts during free breathing1 and improve patient comfort.
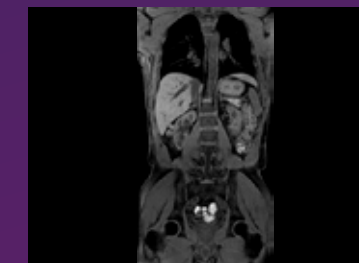
mDIXON XD FFE
Improve your fat-free imaging performance

3D VANE XD
Free breathing abdominal imaging

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

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.

dS IQ Suite
Premium

The dS IQ Suite Premium bundle includes software applications for motion control, fat free performance scans and imaging patients with MR Conditional implants.

MultiVane XD delivers diagnostic images even in the case of severe patient motion. 3D VANE XD supports free breathing abdominal imaging to improve patient comfort. mDIXON XD brings a new dimension to fat suppression. And O–MAR XD improves visualization near MR Conditional implants[1].
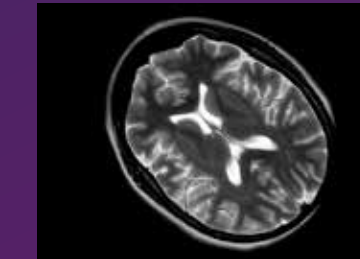
MultiVane XD
Motion-free imaging in short scan time
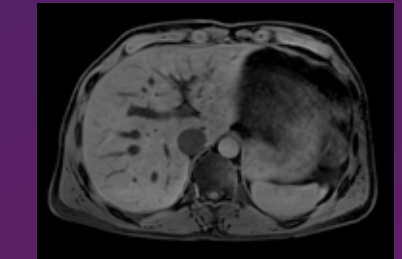
3D VANE XD
Free breathing abdominal imaging
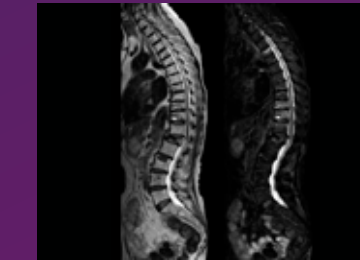
mDIXON XD TSE
Replace all your FatSat by one single fat-free imaging solution
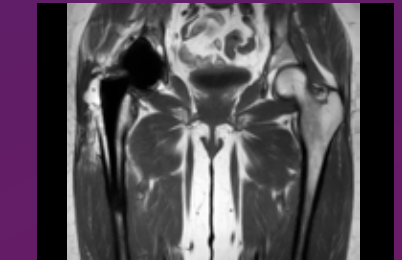
O–MAR XD
Efficient near-metal soft tissue and bone imaging

mDIXON XD FFE
Improve your fat-free imaging performance

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

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 Compared to Multivane, thanks to compatibility with dS SENSE.

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 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.

O-MAR XD

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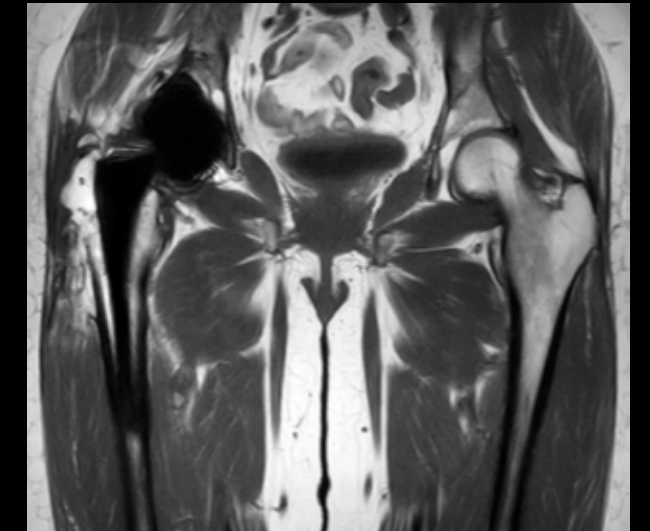
O-MAR XD (Metal Artifact Reduction for Orthopedic implants) allows you to improve visualization of more soft tissue and bone in the near vicinity of MR Conditional Orthopedic implants[1]. This allows you to offer postoperative MR imaging to patients with implants who could develop implant-related conditions.
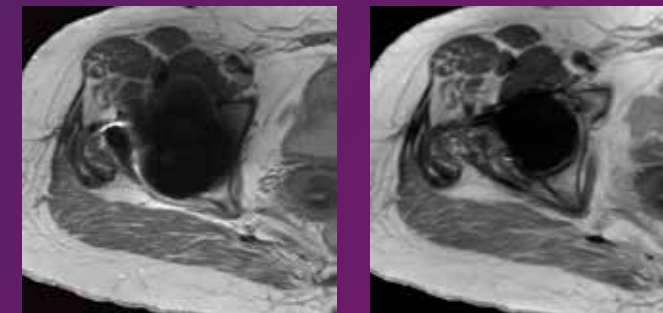
Traditional PDw TSE (left) versus PDw TSE O-MAR XD (right)

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.

dS Vascular Suite Pro

dS Vascular Suite Pro brings a comprehensive suite of MR angiography methods, including dynamic contrast enhanced acquisitions and non-subtraction peripheral MRA. This helps to capture a wealth of structural and physiological information about the blood vessels.

4D-TRAK XD enables high spatial and temporal resolution simultaneously. mDIXON XD MultiStation allows for peripheral MR Angiography acquisitions without the use of a subtraction mask.
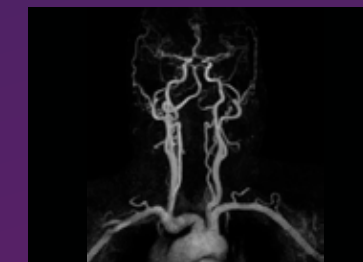
4D-TRAK XD
Flexibility in your MR Angiography studies

mDIXON XD MultiStation
Non-subtraction peripheral MR Angiography

4D-TRAK XD
Flexibility in your MR Angiography studies
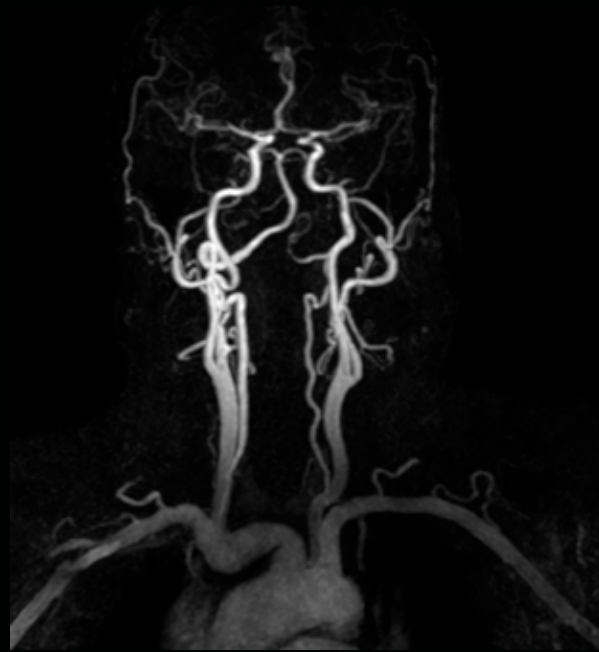
mDIXON XD MultiStation
Non–subtraction peripheral MR Angiography
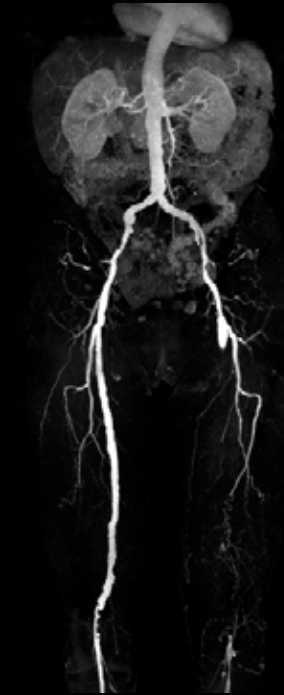
4D-TRAK XD provides a fast, dynamic contrast–enhanced MR Angiography method with flexible sampling of both the arterial- and venous phase, by applying view sharing technique, enabling high spatial and temporal resolution simultaneously.
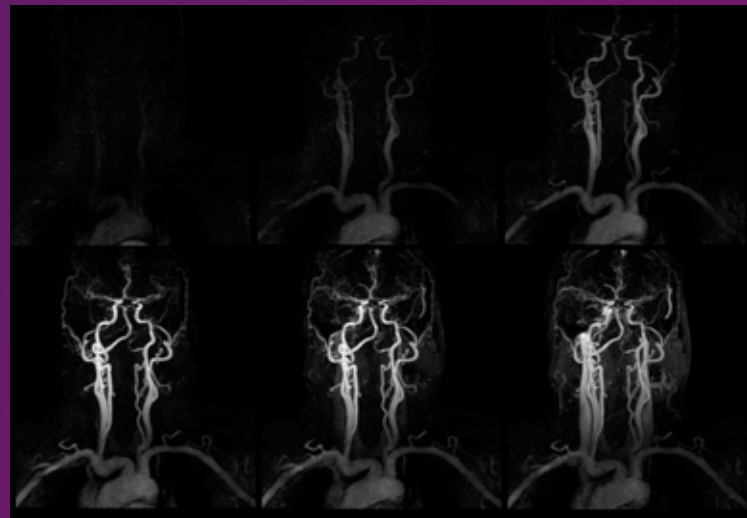
Fast, dynamic contrast-enhanced MR Angiography

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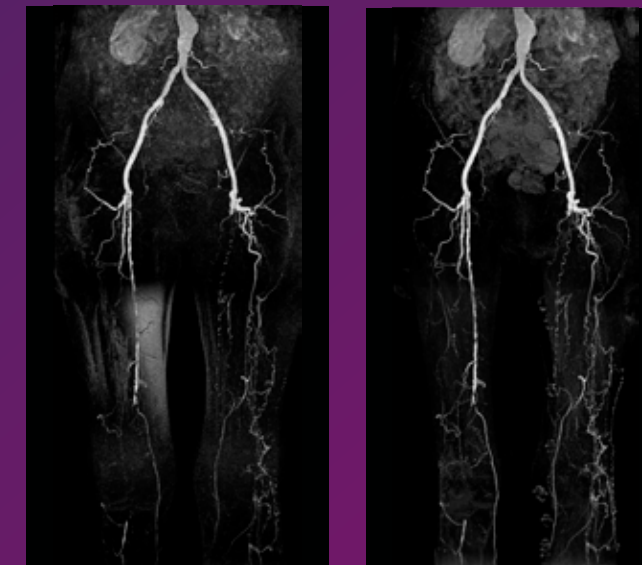
MR Angiography with subtraction (left) and in one single pass (right) with improved vessel-to-background contrast

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.

dS Diffusion Suite
Pro

dS Diffusion Suite Pro allows to step up diffusion performance by speeding up and improving the quality of diffusion scans, including small FOV diffusion imaging.

Diffusion Excellence Pack offers a range of innovations to enhance the efficiency and quality of diffusion imaging. Including reliable fat suppression with simplified workflow, generation of synthetic high b-value images and improved geometrical match between EPI and MR anatomical images[1]. DWI XD TSE contributes to robust suppression of motion artifacts[2] and delivers images with less distortion[1]. Zoom Diffusion allows to acquire small FOV imaging with reduced geometrical distortion and higher spatial resolution[3].

1 Compared to Philips conventional DWI EPI scans.
2 Compared to Philips multi shot DWI TSE.
3 Compared to conventional full FOV DWI-EPI.
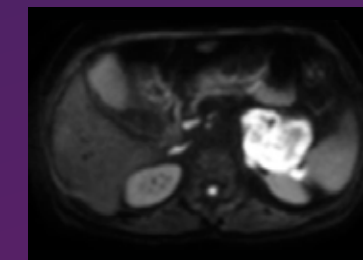
Diffusion Excellence Pack
Step up your
diffusion performance
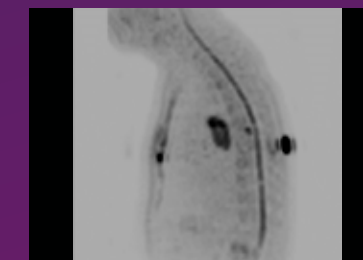
DWI XD TSE
Speed up and improve the
quality of your diffusion TSE
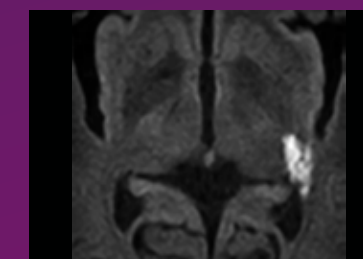
Zoom Diffusion
Small FOV diffusion imaging for
improved image quality

Diffusion Excellence Pack

Step up your diffusion performance
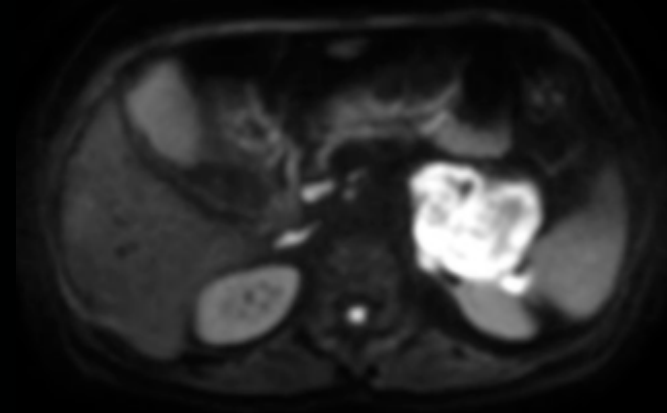
DWI XD TSE

Speed up and improve the quality of your diffusion TSE
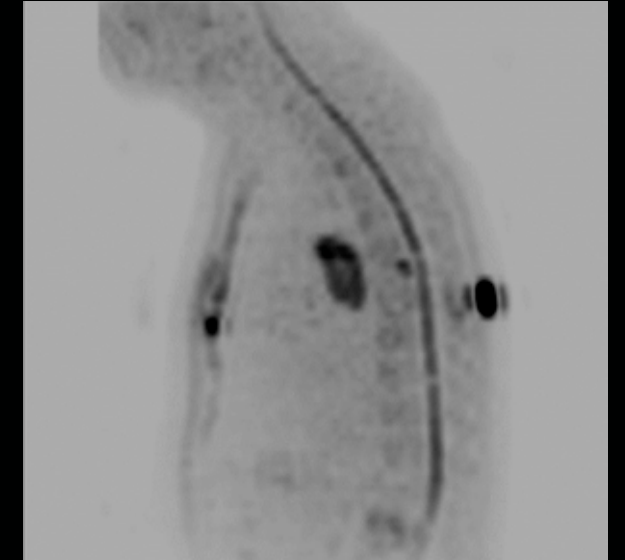
The Diffusion Excellence Pack offers a unique range of innovations to address the common challenges you face to enhance the efficiency and quality of diffusion imaging for areas ranging from oncology to neuro.

SmartShim, delivering reliable fat suppression with simplified workflow due to automating the planning of the shim region and image-based shimming.

Computed DWI, decreasing overall exam time and enhancing clinical workflow[1] by generating synthetic high b-value images.

LOVA ADC, delivering consistent ADC values with up to 95% accuracy[2] in large field of views.

EPIC Brain, improving the geometrical match between EPI images and MR anatomical brain images, compared to conventional EPI scans.

1 Compared to Philips DWI, by generating synthetic high b-value images.
2 Based on in house testing on phantom at a FOV of 45 cm.

Reliable fat suppression
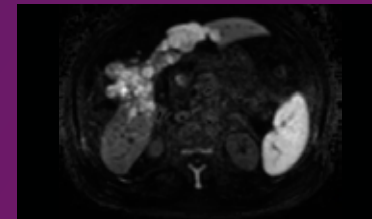
Synthetic b-value images

Consistent ADC values
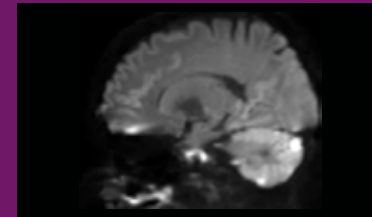
Improved geometrical match

DWI XD TSE delivers up to 25% faster diffusion TSE imaging with improved resolution due to its multi-shot approach[1]. DWI XD TSE is compatible with MultiVane, contributing to robust suppression of motion artifacts[2]. It also delivers images with less distortion because it is less sensitive to susceptibility differences compared to Philips conventional DWI EPI sequences.

1 Compared to Philips DWI TSE (Single-shot)
2 Compared to Philips multi shot DWI TSE
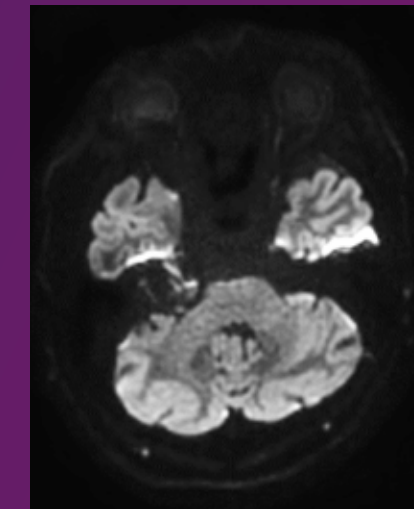
DWI EPI (left) versus robust inner ear DWI XD TSE (right)

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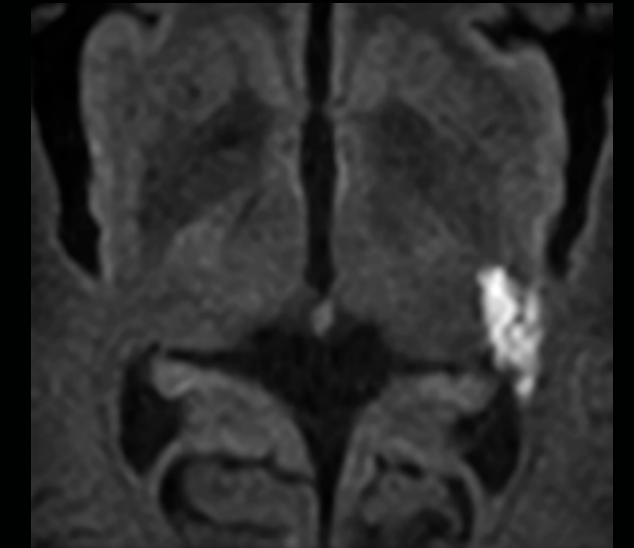
Zoom Diffusion allows you to acquire small FOV imaging, down to 200 x 50 mm, with reduced geometrical distortion, due to reduced EPI echo train length in DWI-EPI compared to conventional full FOV DWI-EPI, and higher spatial resolution, due to smaller acquisition voxel size compared to full FOV DWI-EPI,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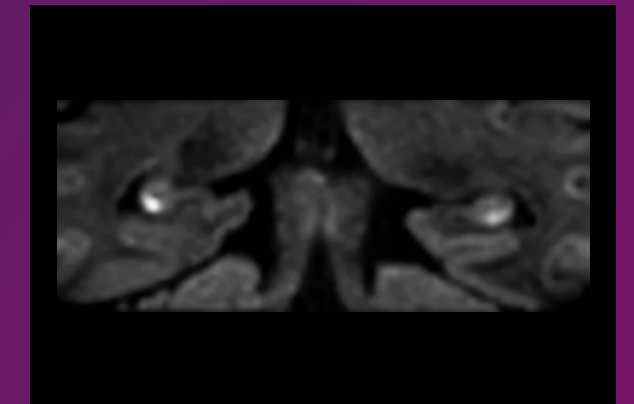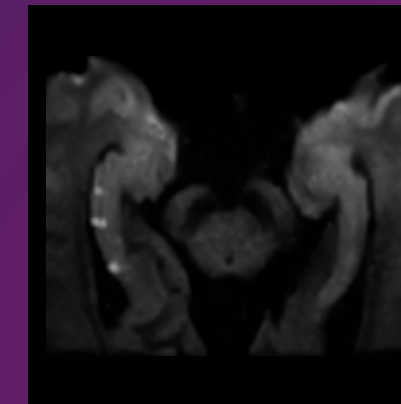
Small FOV diffusion imaging with high spatial resolution

AV Onco Diffusion Pro

AV Onco Diffusion Pro includes advanced visualization for diffusion

Advanced Diffusion Analyses (ADA) allows to calculate and display cDWI at a b-value of choice. The package also supports advanced MR parametric analyses, generating maps of diffusion kurtosis and intravoxel incoherent motion (IVIM) diffusion.
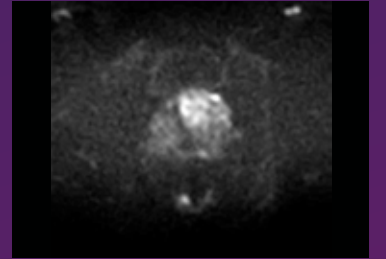
Advanced Diffusion Analyses
Calculate and generate diffusion maps

dS Spine Suite
Pro

dS Spine Suite Pro helps to capture a wealth of structural information about the spine and view multi-dimensional data to enable diagnostic decision support.

3D SpineVIEW helps to acquire high resolution data in multiple directions, including oblique, in one scan. IRIS Zoom delivers small FOV diffusion imaging with higher resolution, lower distortion and improved fat suppression[1].

3D SpineVIEW
View your 3D TSE imaging data in any plane

IRIS Zoom
Improved small FOV spine diffusion imaging

1. Compared to Philips Zoom DWI.

3D SpineVIEW

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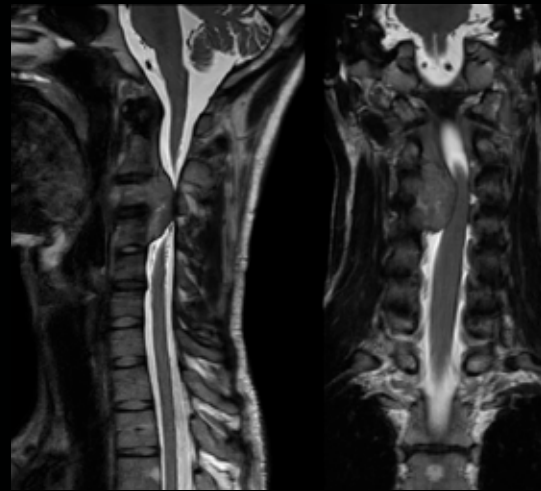
3D SpineVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.
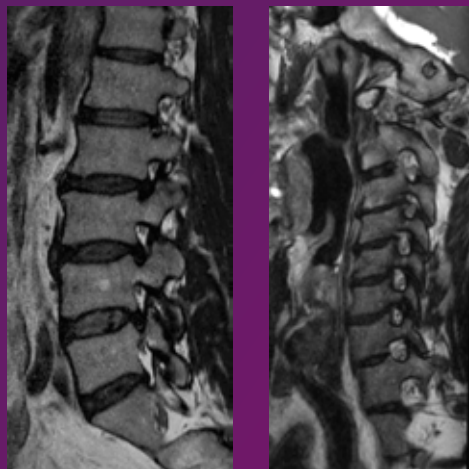
Viewing imaging data in oblique directions

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.

IRIS Zoom

Improved small FOV spine diffusion imaging

IRIS Zoom delivers small FOV diffusion imaging with higher resolution, lower distortion and improved fat suppression than Philips Zoom DWI. Higher resolution diffusion imaging in the spine is achieved by employing 2D navigator-based motion correction integrated into the dS-SENSE framework. IRIS Zoom also delivers higher SNR in spine imaging compared to Philips MultiVane DWI XD TSE.
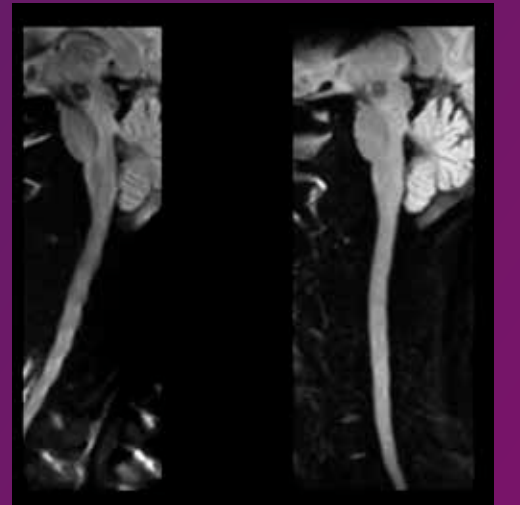
b800 Zoom DWI (left) versus IRIS Zoom DWI (right)

dS Neuro Suite
Plus

dS Neuro Suite Plus helps to gain visibility into neurological anatomies and view multi-dimensional data to enable diagnostic decision support.

SWIp offers high resolution 3D susceptibility weighted brain imaging and has a high sensitivity to enhance contrast for deoxygenated (venous) blood or calcium deposits. Black Blood imaging allows to perform 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.
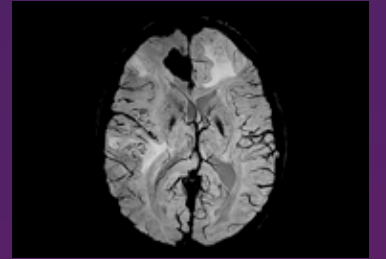
SWIp
Exquisite susceptibility contrast

Black Blood imaging
Enhance your diagnostic confidence for brain imaging

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.

SWIp

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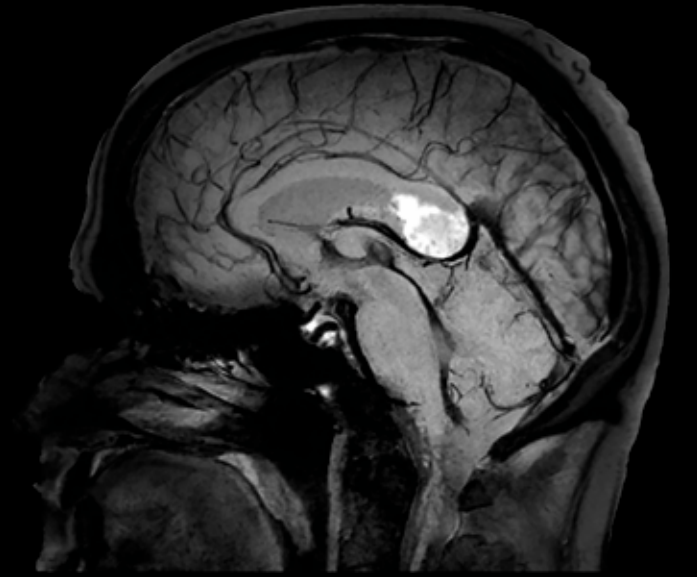
SWIp has a high sensitivity to enhance contrast for deoxygenated (venous) blood or calcium deposits and may help you, when used in combination with other clinical information, in the diagnosis of various neurological pathologies. SWIp offers high resolution 3D susceptibility weighted brain imaging allowing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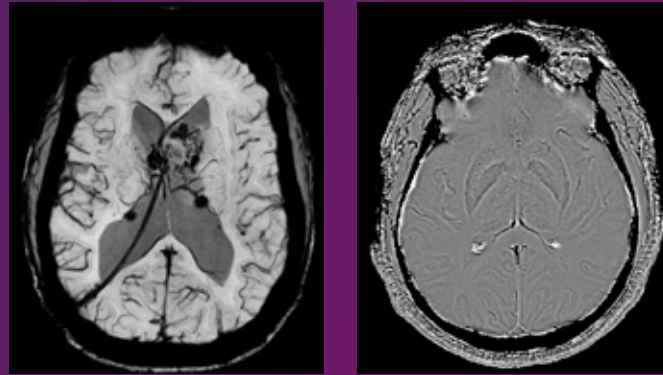
3D susceptibility weighted brain imaging, including phase maps

Additional information:

- High signal-to-noise ratio[1].

- Includes detailed phase maps to support advanced diagnosis.

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.
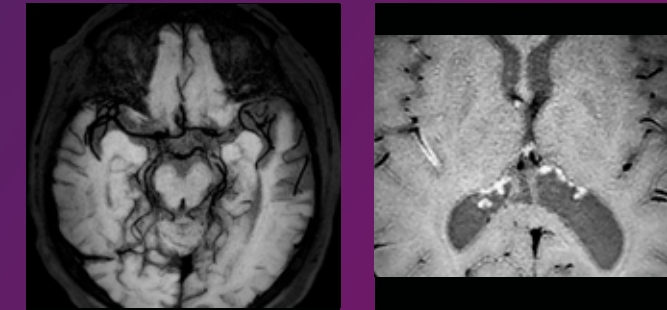
Reduction of the intra-lumen brain blood signal

Additional information:

- Fast scan times[3] of five minutes.

- 3D isotropic acquisition enables reformats in any plane (including oblique) without loss of resolution.

1 Due to multi-echo approach.

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.

dS Neuro Suite Pro

dS Neuro Suite Pro brings advanced neuro applications to resolve complex questions with more certainty.

Bold helps visualize task-related areas of activation in the brain. DTI FiberTrak allows to trace, analyze and process fibers in real-time with minimal mouse clicks. FiberTrak Extension delivers input for very high definition fiber tracking in the brain or spine. 3D ASL enables reproducible contrast-free brain perfusion with fully automated calculation of color coded ASL maps.
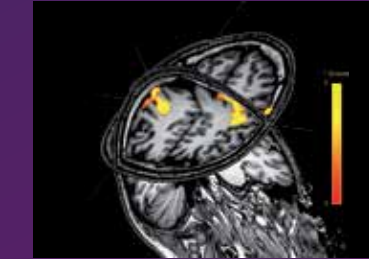
Bold
Motion-free imaging in short scan time

DTI FiberTrak
Fast, easy clinical fiber tracking
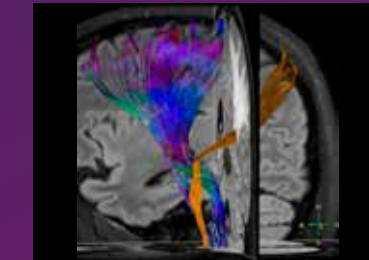
FiberTrak Extension
High definition fiber tracking in the brain or spine
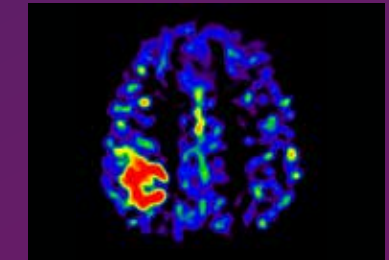
3D ASL
Reproducible contrast-free brain perfusion

BOLD

Fast, easy
and reliable fMRI
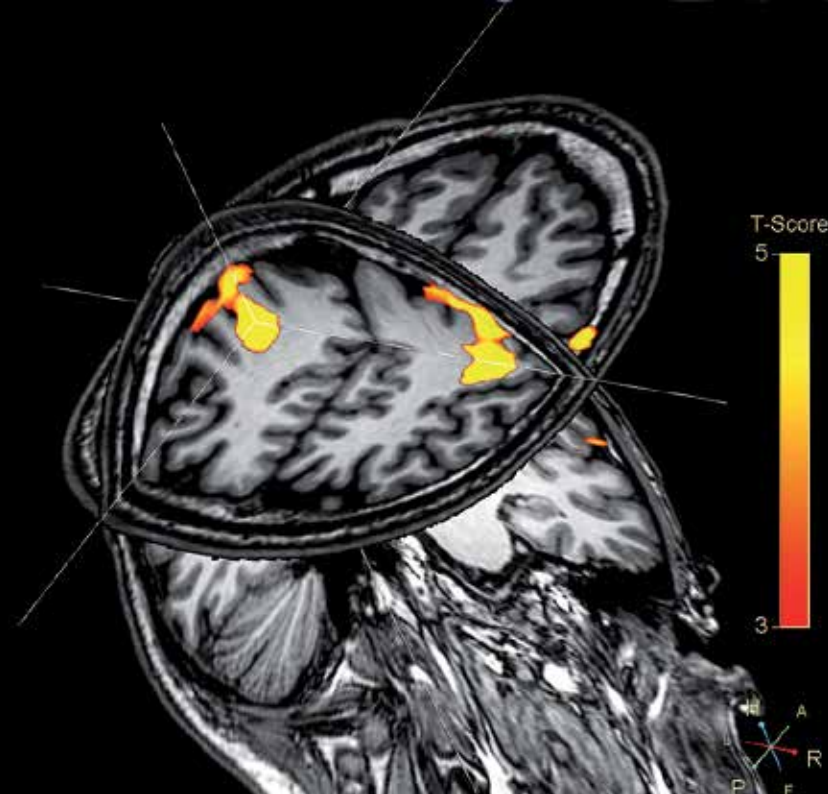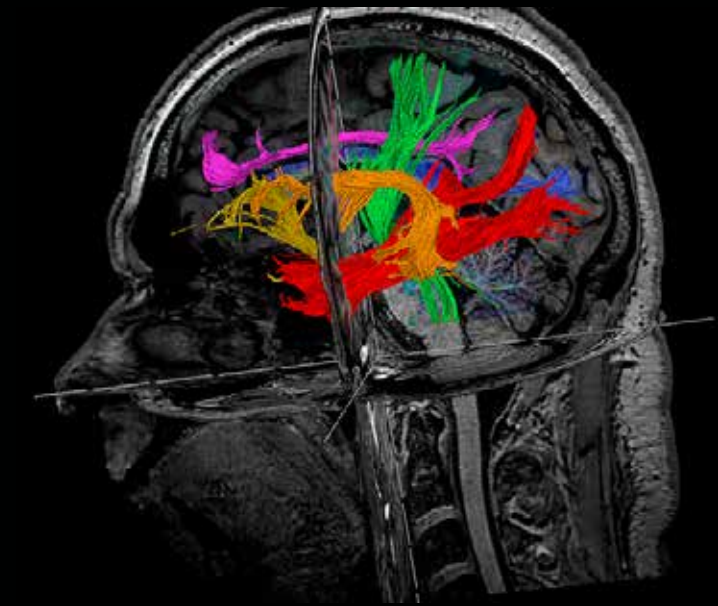
Accurately acquiring fMRI BOLD data during
neuro imaging helps visualize task-related areas
of activation in the brain. The fMRI paradigms that
deliver and control stimuli are fully automated via
dedicated ExamCards to make fMRI fast, easy, and
reliable. The iView BOLD analysis package provides
real-time processing of fMRI BOLD data into
functional activation maps.

Visualize task-related areas of activation in the brain

DTI FiberTrak

Fast, easy clinical
fiber tracking
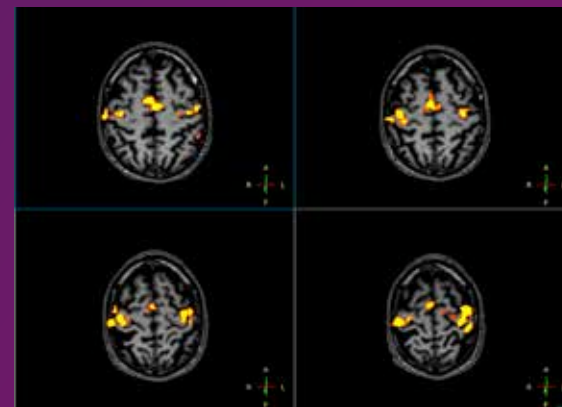
Visualize specific white matter fiber tracts in the brain with Diffusion
Tensor Imaging (DTI) data and fiber tracking. This package allows you
to trace, analyze and process fibers in real-time with minimal mouse
clicks. It supports pre-operative surgical planning, post-surgery
evaluation, and general evaluation of fiber tracts around tumors and
lesions in connection with functional areas. DTI FiberTrak supports up
to 32 directions and 16 b-values and includes automatic calculation of
Fractional Anisotropy (FA) maps.

Visualization of white matter fiber tracts in the brain

FiberTrak Extension
High definition fibertracking in the brain or spine
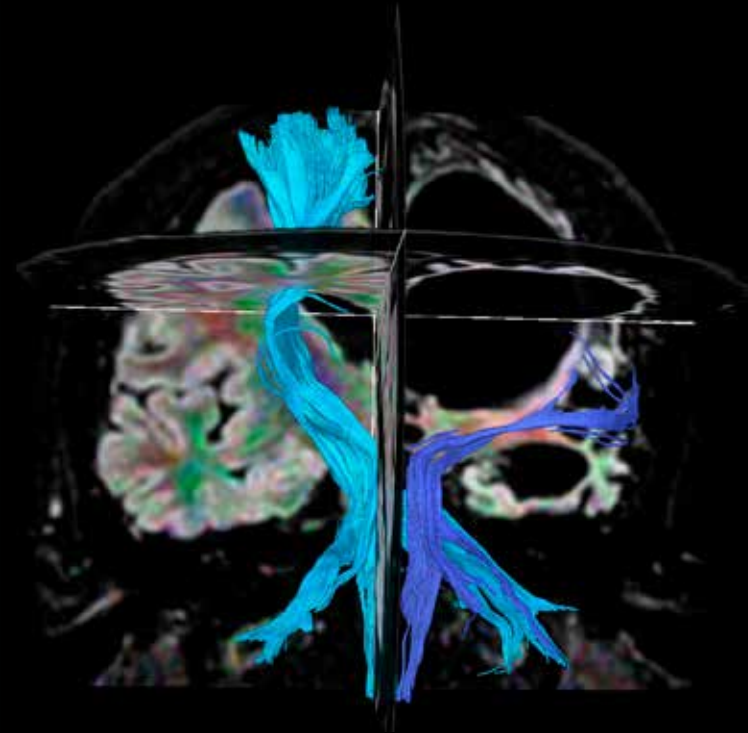
3D ASL

Reproducible contrast-free brain perfusion
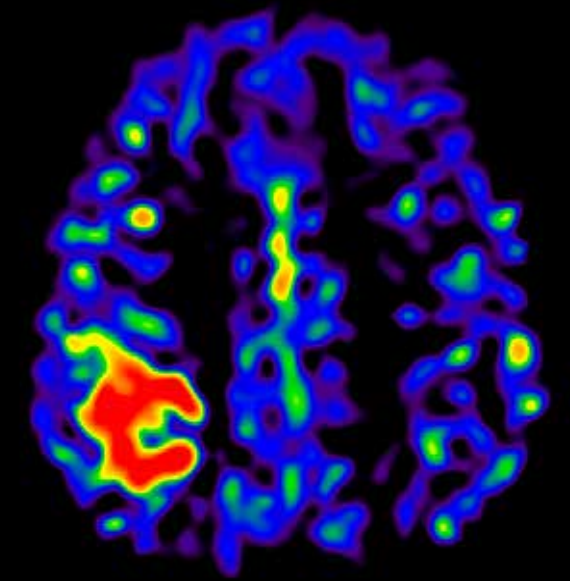
The FiberTrak Specialist Extension package Allows for diffusion imaging with up to 128 b-vectors and 16 b-values, delivering input for very high definition fiber tracking in the brain or spine.
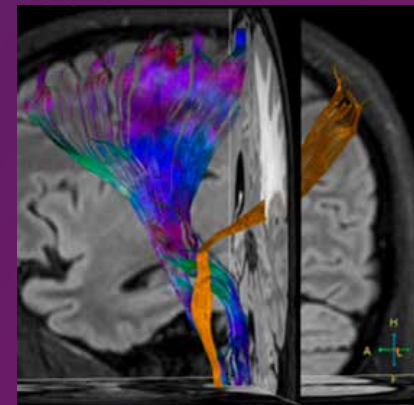
Visualization of white matter fiber tracts in the brain

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.
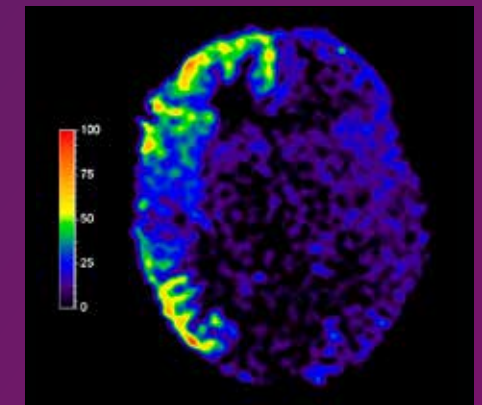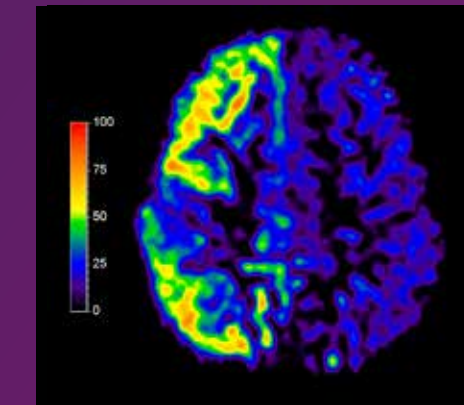
Quantification of brain perfusion in a non-contrast manner

1 Compared to Philips 3D Selective 3D FFE imaging

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

dS Neuro Suite Premium

dS Neuro Suite Premium brings specialized neuro applications, and includes a set of advanced diagnostic applications.

NeuroScience allows to explore brain connectivity and includes advanced fMRI capabilities. MultiBand SENSE enables twice as many diffusion vectors and can be used to double capabilities for fMRI. Spectroscopy XD delivers faster MR Spectroscopy examinations, more robust water suppression and increased localization accuracy. NeuroScience extension brings DTI studies to a higher level by giving control of the diffusion encoding gradients.
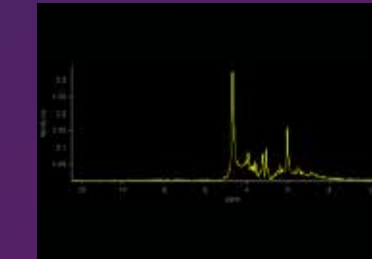
Spectroscopy XD
More precise and more robust MR brain spectroscopy
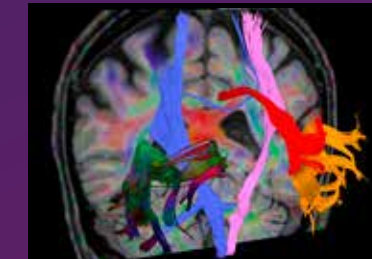
MultiBand SENSE
High acceleration for your fMRI and DTI sequences
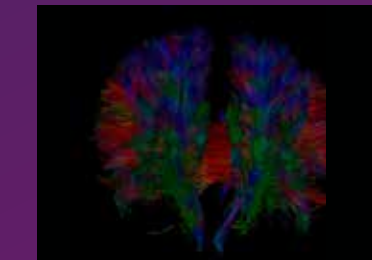
NeuroScience
Explore brain connectivity
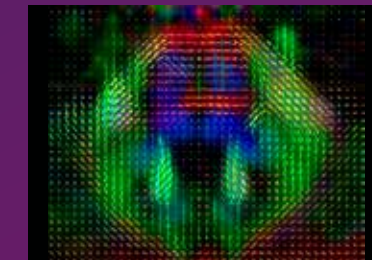
NeuroScience extension
Extend your diffusion MRI studies

1 Using VAPOR, compared to conventional Philips water suppression technique (excitation) that use time demanding AWSO prescan for optimal water suppression.
2 Compared to Philips PRESS, due to sLASER; reduction of the chemical shift displacement up to a factor 4

Spectroscopy XD
More precise and more robust MR brain spectroscopy

Spectroscopy XD is an add-on to our comprehensive Spectroscopy option. It includes VAPOR, which delivers faster MR spectroscopy examinations and more robust water suppression, up to a factor 4, than the conventional Philips water suppression technique (excitation) that uses time-consuming AWSO prescans. Furthermore, sLASER provides increased localization accuracy due to a reduction of the chemical shift displacement by a factor of 4 when compared to Philips PRESS.

No VAPOR, amplitude ~3.5 (top) versus VAPOR, amplitude ~0.35 (bottom)

MultiBand SENSE
High speed, high resolution fMRI and DTI studies
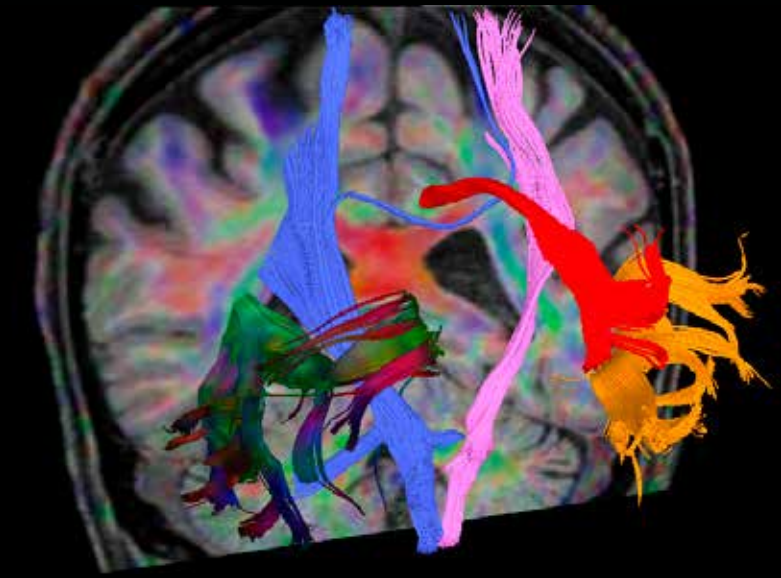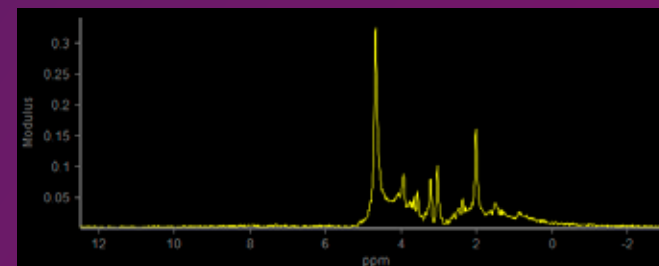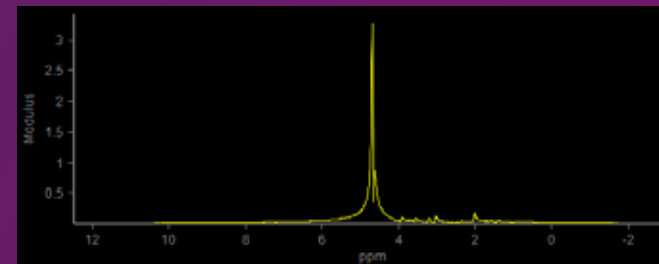
By simultaneously exciting multiple slices, MultiBand SENSE allows you to use state-of-the-art acceleration techniques in functional brain scans to either shorten MRI scan time or enhance diagnostic information. It doubles your capabilities for fMRI. Due to a shorter minimum TR for fMRI, MultiBand SENSE can be used to deliver twice the temporal resolution with virtually no compromise in SNR, or to obtain twice as much anatomical coverage at similar scan times with virtually equal image quality.[1] In your DWI/DTI brain sequences, MultiBand SENSE enables up to 45% acceleration or twice as many diffusion vectors to be acquired with virtually equal image quality.[1] With MultiBand SENSE you can perform fMRI and DTI sequences at high speed and high resolution.[2]

DTI
16 directions
6:51 min
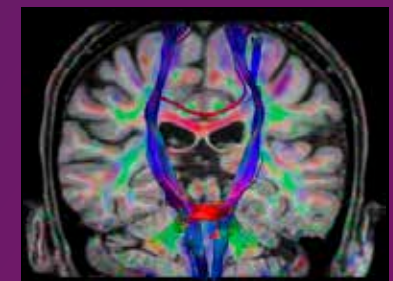
DTI with MultiBand SENSE
16 directions
3:37 min

1 Compared to Philips DTI/fMRI scans without MultiBand SENSE.
2 Up to a MultiBand SENSE factor of 2.

NeuroScience

Explore brain connectivity
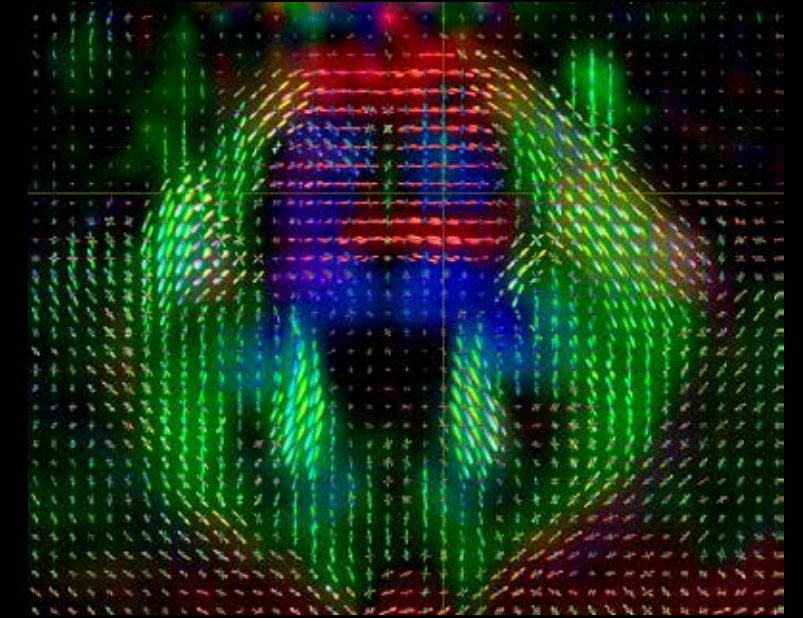
NeuroScience comprehensive package helps you to explore brain connectivity by supporting advanced acquisition schemes allowing for high-definition brain fiber tracking, including crossing fibers and advanced fMRI capabilities.
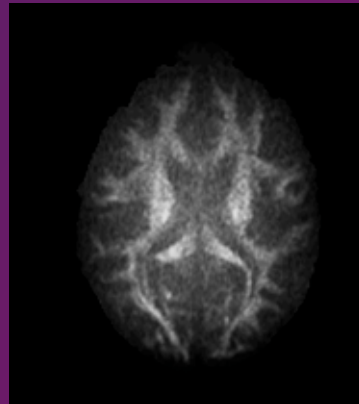
Diffusion acquisition with a b-value of 15.000

Additional information:

· Allows diffusion-weighted multi-shell acquisitions with up to 32 b-values and up to 128 unique diffusion directions

· Easy workflow for user defined gradient direction input

· Perform your fMRI studies with enhanced nyquist ghost stability and extended data storage (up to 64k images)

· Enables monitoring of consistency in longitudinal fMRI studies with a quality assurance tool, in line with fBRIN standards

· Includes B0 mapping for offline data correction and image processing

· Easy-to-use export tools in various formats, including NIfTI

NeuroScience extension

Extend your diffusion MRI studies

NeuroScience extension is an add-on to the comprehensive NeuroScience option. The extension brings your multi-shell DTI studies to a higher level. Advanced diffusion gradient control gives the scientific user control of the diffusion encoding gradient duration through selection of multiple diffusion encoding gradient waveforms. Furthermore, 2k DTI provides advanced control over diffusion gradients with up to 2048 independent diffusion encodings (vectors), each with up to 1024 different weightings and 1024 different directions

Multi-shell DTI b4000 (128 directions)

AV Neuro
Plus

AV Neuro Plus includes advanced visualization for MR neuro perfusion.

MR Neuro Perfusion supports MR parametric brain analyses including perfusion mapping and diffusion-perfusion mismatch by evaluating DSC T2* perfusion studies and supporting the visualization and quantification of diffusion-perfusion mismatch.
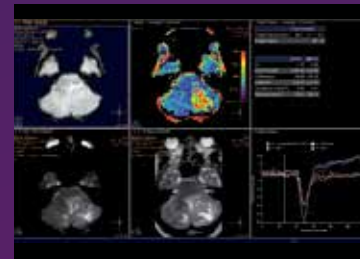
MR Neuro Perfusion
MR parametric brain analysis

AV Neuro
Pro

AV Neuro Pro includes advanced visualization for MR FiberTrak and MR iViewBold.

MR FiberTrak provides visualization and quantification of white matter structure in the brain and spinal tracts using task guidance. This supports anatomical brain assessments via DTI tractography reconstruction. MR iView Bold includes the functional MRI (fMRI) analysis package providing real-time processing of fMRI BOLD data into functional activation maps. This helps identify and visualize functional regions of the brain, relying on local metabolic and hemodynamic changes that occur in activated brain areas.
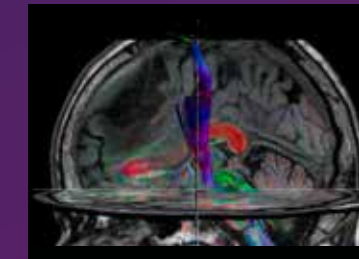
MR FiberTrak
Visualization of white matter tracts

MR iViewBold
Real-time functional activation maps

MR FiberTrak

DTI tractography reconstruction

MR FiberTrak provides visualization and quantification of white matter structure in the brain and spinal tracts using task guidance. This supports advanced anatomical brain assessments via DTI tractography reconstruction.

Visualization of white matter tracts
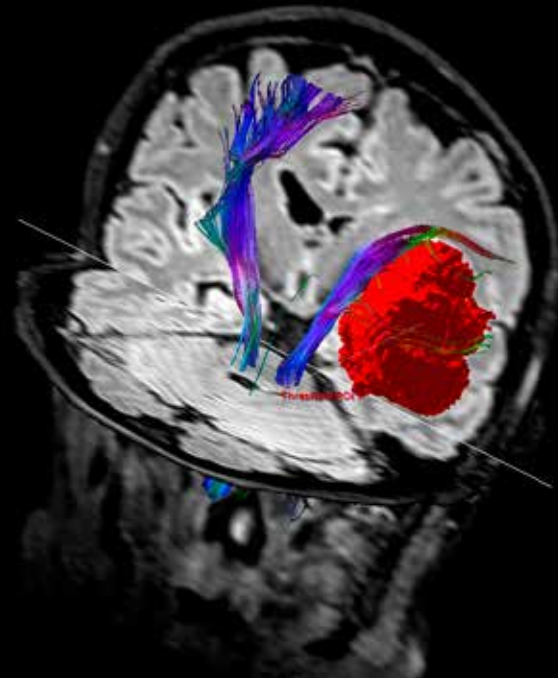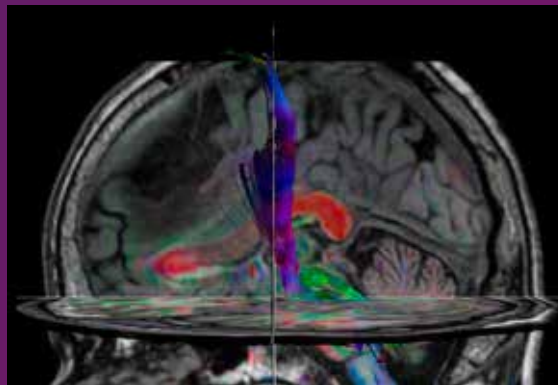
MR iView Bold

Functional MRI analysis

MR iView Bold includes the functional MRI (fMRI) analysis package providing real-time processing of fMRI BOLD data into functional activation maps. This helps identify and visualize functional regions of the brain, relying on local metabolic and hemodynamic changes that occur in activated brain areas.
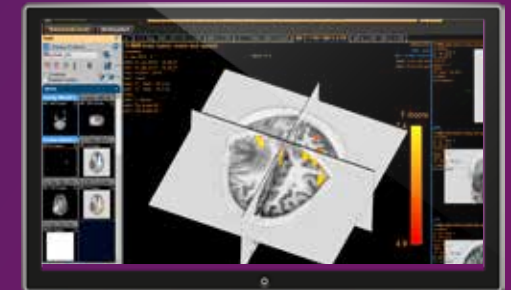
Real-time functional activation maps

dS Spectro Suite
Pro

dS Spectro Suite Pro provides a fully integrated proton spectroscopy solution allowing for precise and robust MR brain spectroscopy.

Spectroscopy package provides information about the spatial distribution of metabolites in the brain, including single voxel, multi-voxel and multi-slice proton spectroscopy. SpectroView analysis is included for visualization and processing of all spectroscopic data.

Spectroscopy XD adds VAPOR, delivering faster MR spectroscopy examinations[1] and more robust water suppression[1] and sLASER, providing increased localization accuracy[2].

Spectroscopy
Fully integrated
proton spectroscopy

Spectroscopy XD
More precise and more
robust spectroscopy

1. Using VAPOR, compared to conventional Philips water suppression technique (excitation) that use time demanding AWSO prescan for optimal water suppression.
2. Compared to Philips PRESS, due to sLASER; reduction of the chemical shift displacement up to a factor 4
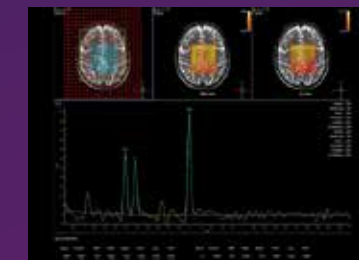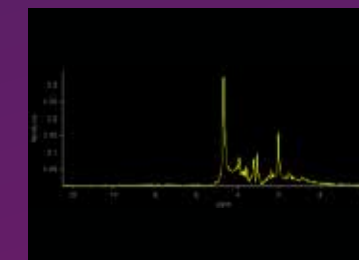
Spectroscopy

Fully integrated proton spectroscopy
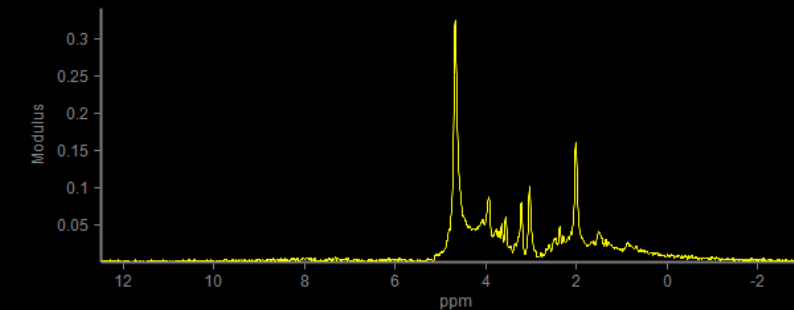
Spectroscopy Specialist provides extra information about the spatial distribution of metabolites in the brain. This package provides a set of single voxel, multi-voxel and multi-slice proton spectroscopy, fully integrated into the MRI console. To reduce scan time, a combination of Turbo Spectroscopic Imaging and dS SENSE can be used. Anisotropic matrix can be used to further reduce acquisition time. Includes SpectroView Analysis package for visualization and processing of all spectroscopic data.
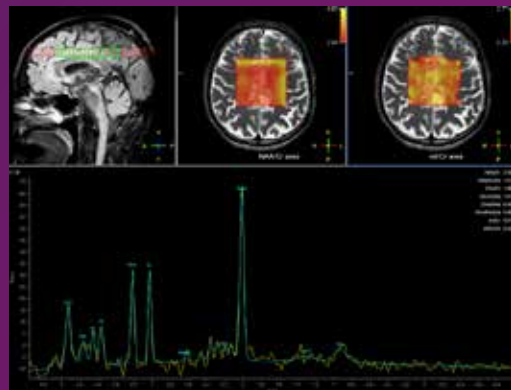
Spectroscopic imaging

Spectroscopy XD

More precise and more robust spectroscopy

Spectroscopy XD is an add-on to our comprehensive Spectroscopy option. It includes VAPOR, which delivers faster MR spectroscopy examinations and more robust water suppression, up to a factor 4, than the conventional Philips water suppression technique (excitation) that uses time-consuming AWSO prescans. Furthermore, sLASER provides increased localization accuracy due to a reduction of the chemical shift displacement by a factor of 4 when compared to Philips PRESS.
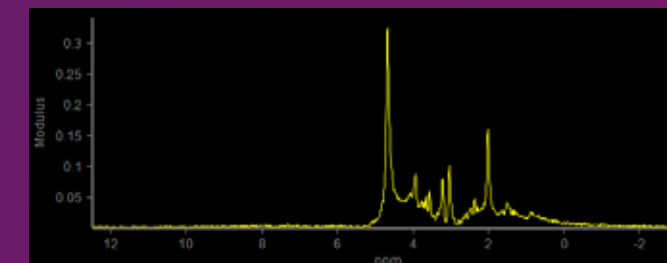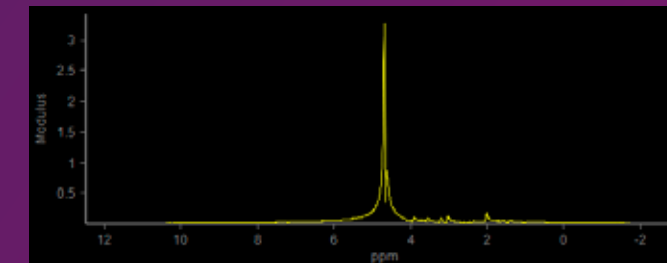
No VAPOR, amplitude ~3.5 (top) versus VAPOR, amplitude ~0.35 (bottom)

dS Cardiac Suite
Pro

dS Cardiac Suite Pro allows to expand cardiac MR functionality and allows for non-invasive assessment of myocardial tissue. Designed for detection of ischemic and non-ischemic diseases, including quantitative tissue characterization, to capture a wealth of functional and pathological information about the heart.

Cardiac Expert supports the acquisition of multislice, dynamic tissue studies, myocardial tagging1 to allow assessment of regional wall motion and real-time interactive planning of challenging cardiac views. CardiacQuant can help in the non-invasive assessment of myocardial tissue characteristics by providing comprehensive graphs and pixel-based, quantitative information in different regions of the myocardium.

1 By means of REST grids
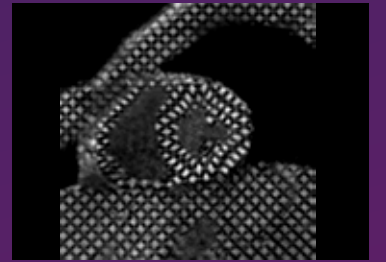
Cardiac Expert
Expand your cardiac
MR functionality
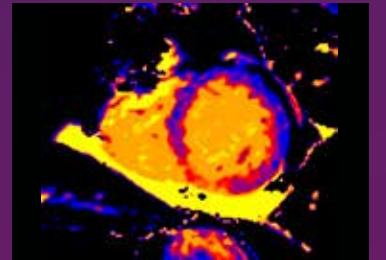
CardiacQuant
Non-invasive assessment
of myocardial tissue

Cardiac Expert

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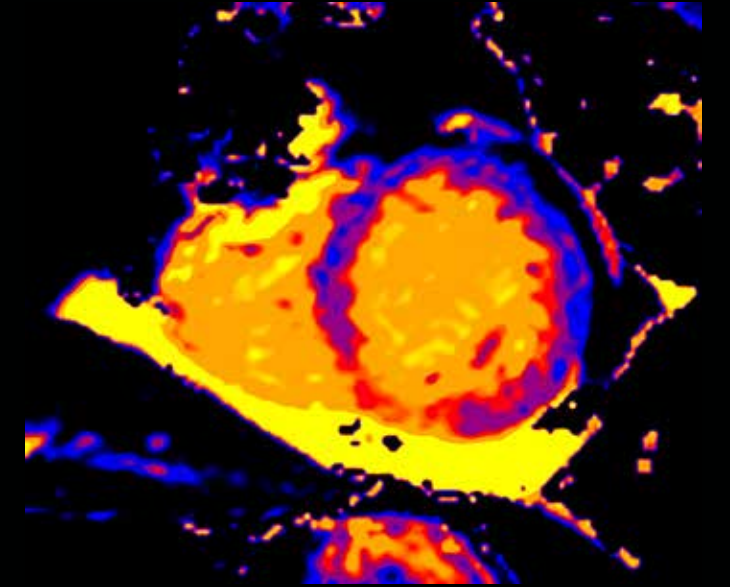
Cardiac Expert supports the acquisition of multi-slice, dynamic tissue studies with T1 weighting and uniform tissue suppression[1] by including Look Locker methods for determining an optimal inversion delay time. Cardiac Expert also provides myocardial tagging[2] to allow assessment of regional wall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

Slices

Dynamics

CardiacQuant

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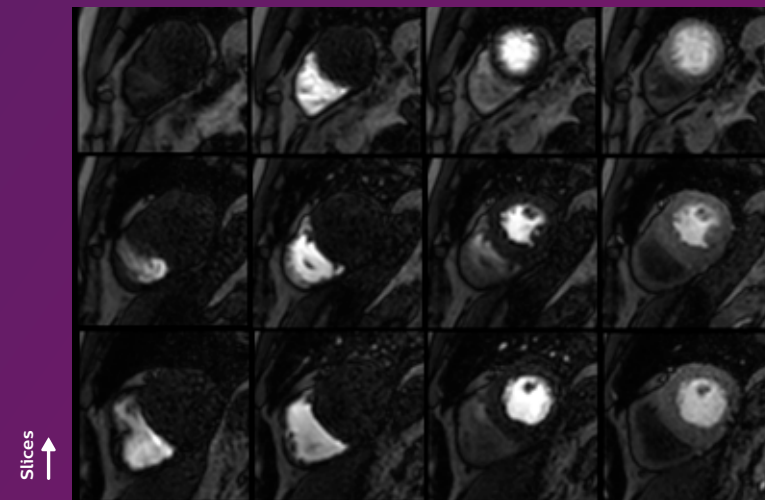
With CardiacQuant you get access to exciting new applications for cardiology, which can help in the non-invasive assessment of myocardial tissue characteristics by providing you with comprehensive graphs and pixel-based, quantitative information in different regions of the myocardium helping you to make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

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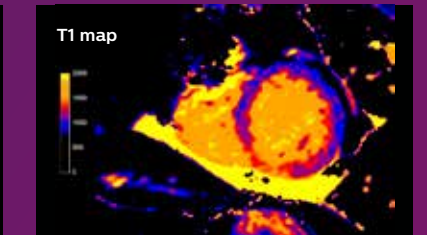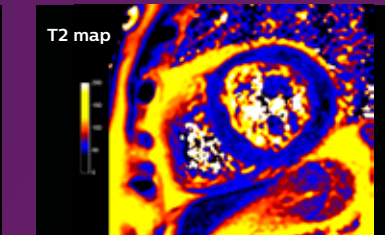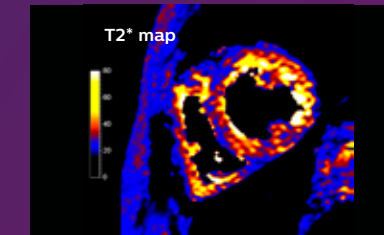
Quantitative T2*, T2 and T1 maps in a single breathhold scan

dS Cardiac Suite
Premium

dS Cardiac Suite Premium allows to perform non-invasive imaging of coronary arteries, accelerate cardiac studies and provides additional techniques for cardiac anatomy, function and more.

Coronary Acquisition allows for non-invasive imaging of coronary arteries by displaying good contrast between myocardium and vessels. k-t BLAST provides up to five fold acceleration for dynamic and real-time cardiac studies as well as single breath hold, multi-slice cine studies. Cardiac Expert extension provides additional techniques for fast black blood imaging, functional imaging and dynamic cardiac MR studies.
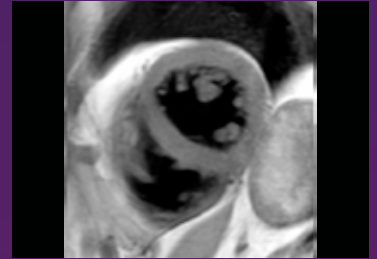
Cardiac Expert extension
Fast CMR methods for anatomy, function and more
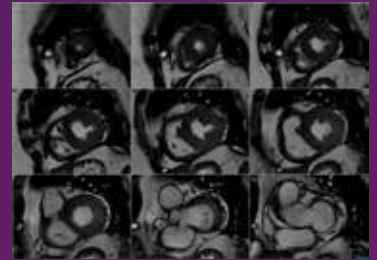
k-t BLAST
Accelerate your cardiac studies
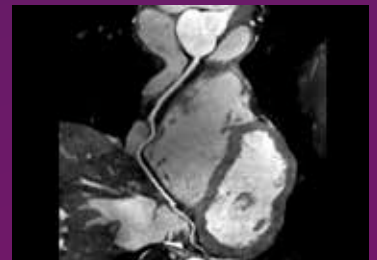
Coronary Acquisition
Perform non-invasive imaging of coronary arteries

Cardiac Expert extension
Fast CMR methods for anatomy, function and more
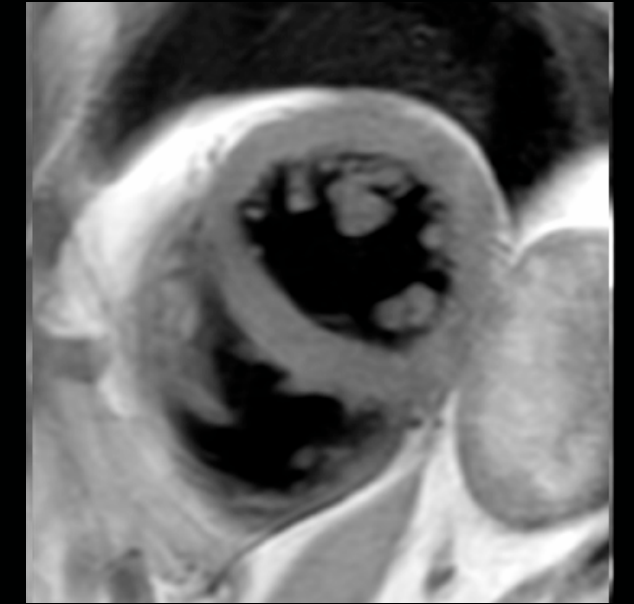
Cardiac Expert extension is an add-on to the comprehensive Cardiac Expert option. It provides additional techniques for fast black blood imaging, functional imaging and dynamic cardiac MR studies. Cardiac Zoom is a small FOV imaging technique that accelerates black blood TSE of the heart and great vessels. It decreases the required breath hold duration by up to 30% without changing spatial resolution by enabling single beat (shot)imaging, which is challenging for conventional (multi-beat) imaging approaches[1]. 3D Non-selective delivers 3D bFFE with reduced banding artifacts compared to Philips 3D Selective 3D FFE imaging. Retrospective EPI combines retrospective triggering with EPI sampling. kt-SENSE is a spatio-temporal acceleration technique that offers all the benefits of k-t BLAST in addition to enhanced image uniformity[2].
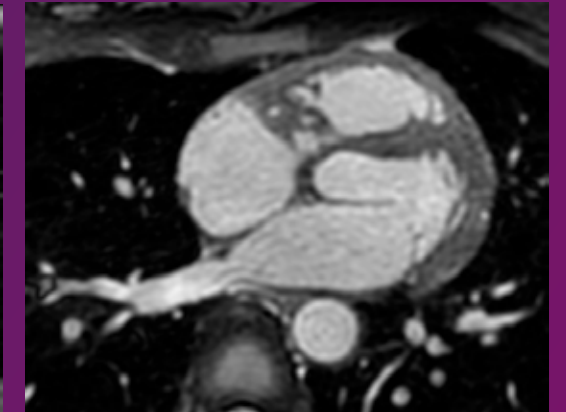
3D Non-selective bFFE in cardiac applications

1 Compared to conventional Philips black blood imaging
2 Compared to regular k-t BLAST

k-t BLAST

Accelerate your cardiac studies
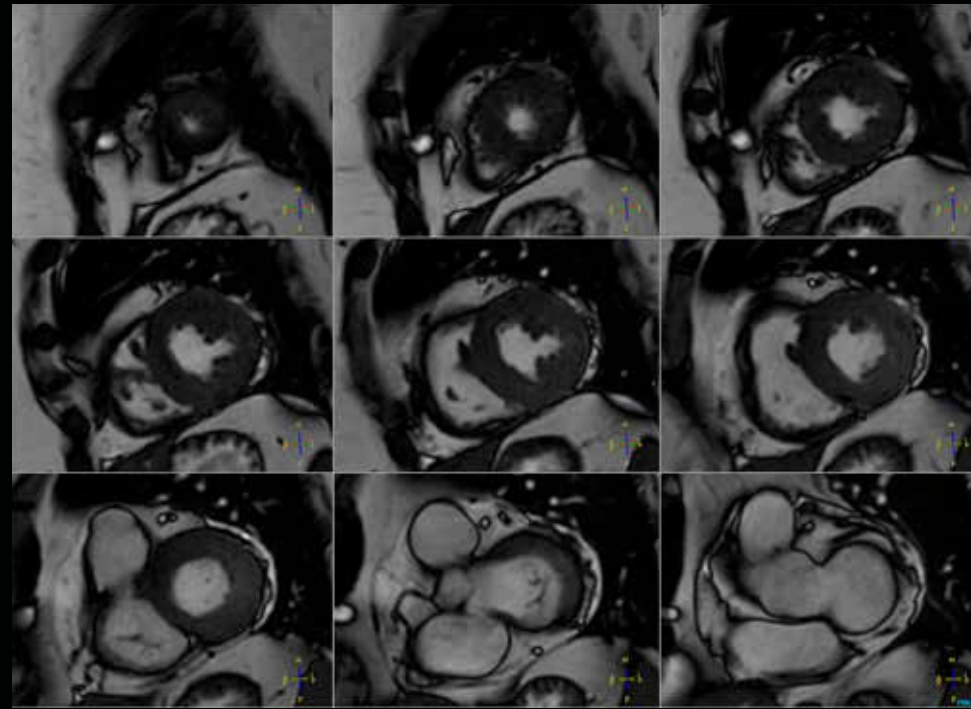
K-t BLAST provides up to five fold acceleration using an alternative parallel imaging technique employing undersampling in time and space. Suited for dynamic and real-time cardiac studies as well as single breath hold, multi-slice cine studies. Can be combined with most other imaging methods.
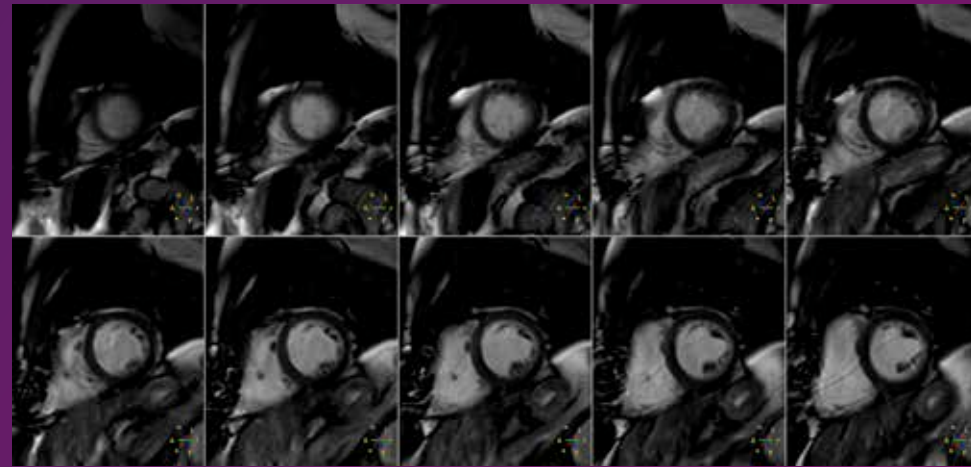
Coronary Acquisition
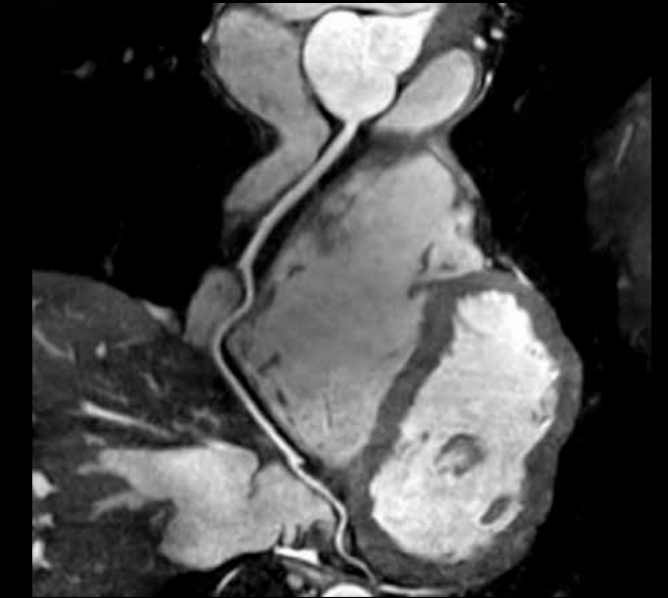
Perform non-invasive imaging of coronary arteries

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.
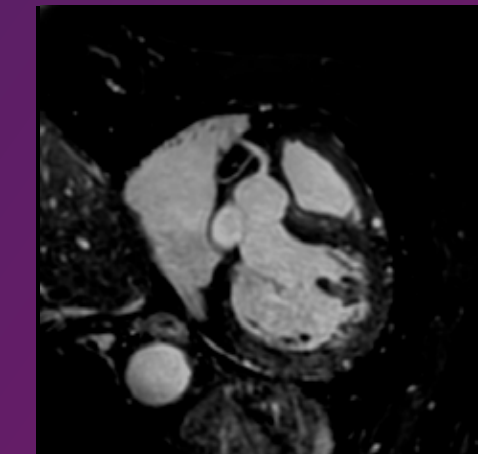
Non-invasive imaging of coronary arteries
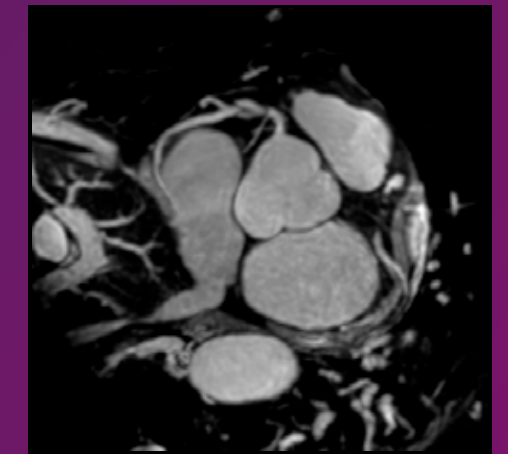
dS Breast Suite
Pro

dS Breast Suite Pro enables consistent fat suppression and reproducible image quality of breast examinations, independent of patient or operator. High resolution isotropic 3D breast acquisitions allow for reformats in arbitrary planes. Time-resolved techniques enable drastically accelerated dynamic breast imaging.

3D BreastVIEW allows to acquire and view high resolution TSE data in multiple directions, including oblique, in one scan. SmartExam Breast provides consistent fat suppression for every patient and assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries. 4D-THRIVE/ BLISS is a time-resolved 3D technique to drastically accelerate dynamic breast imaging. It combines high spatial resolution with high temporal resolution.
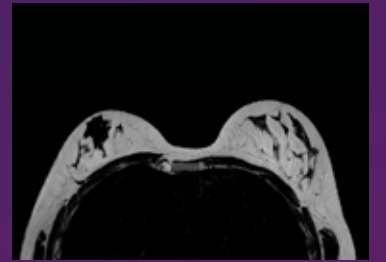
3D BreastVIEW
View your 3D TSE imaging data in any plane

SmartExam Breast
Consistent fat suppression for every patient
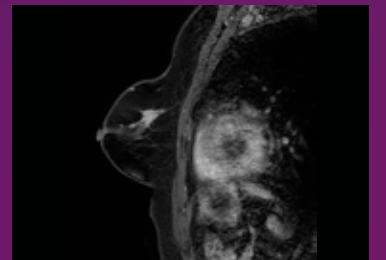
4D-THRIVE/BLISS
Accelerate dynamic breast imaging

3D BreastVIEW

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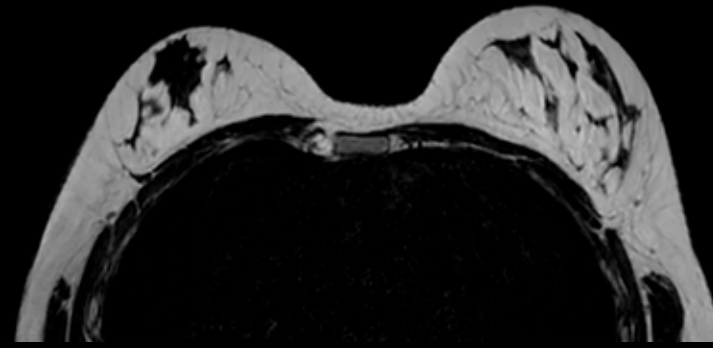
3D BreastVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.
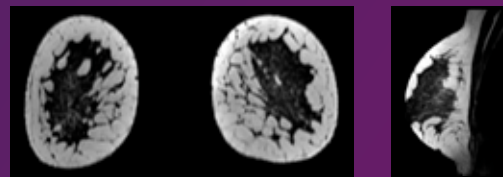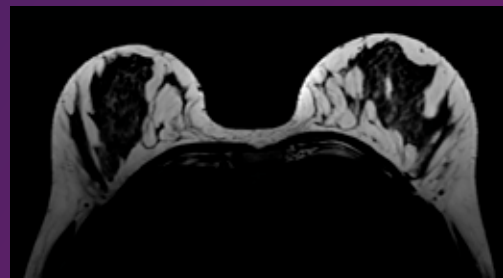
Data in multiple directions, in one scan

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.

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.
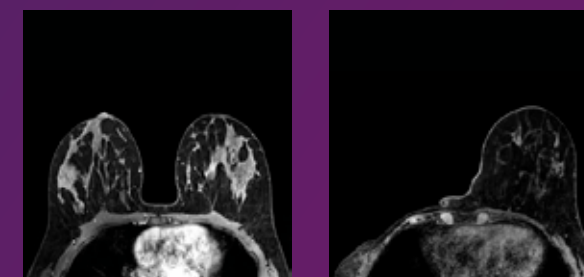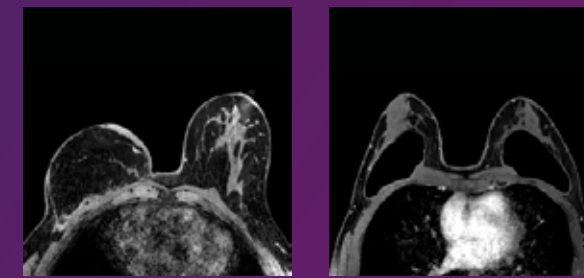
Consistent fat suppression for every patient

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.
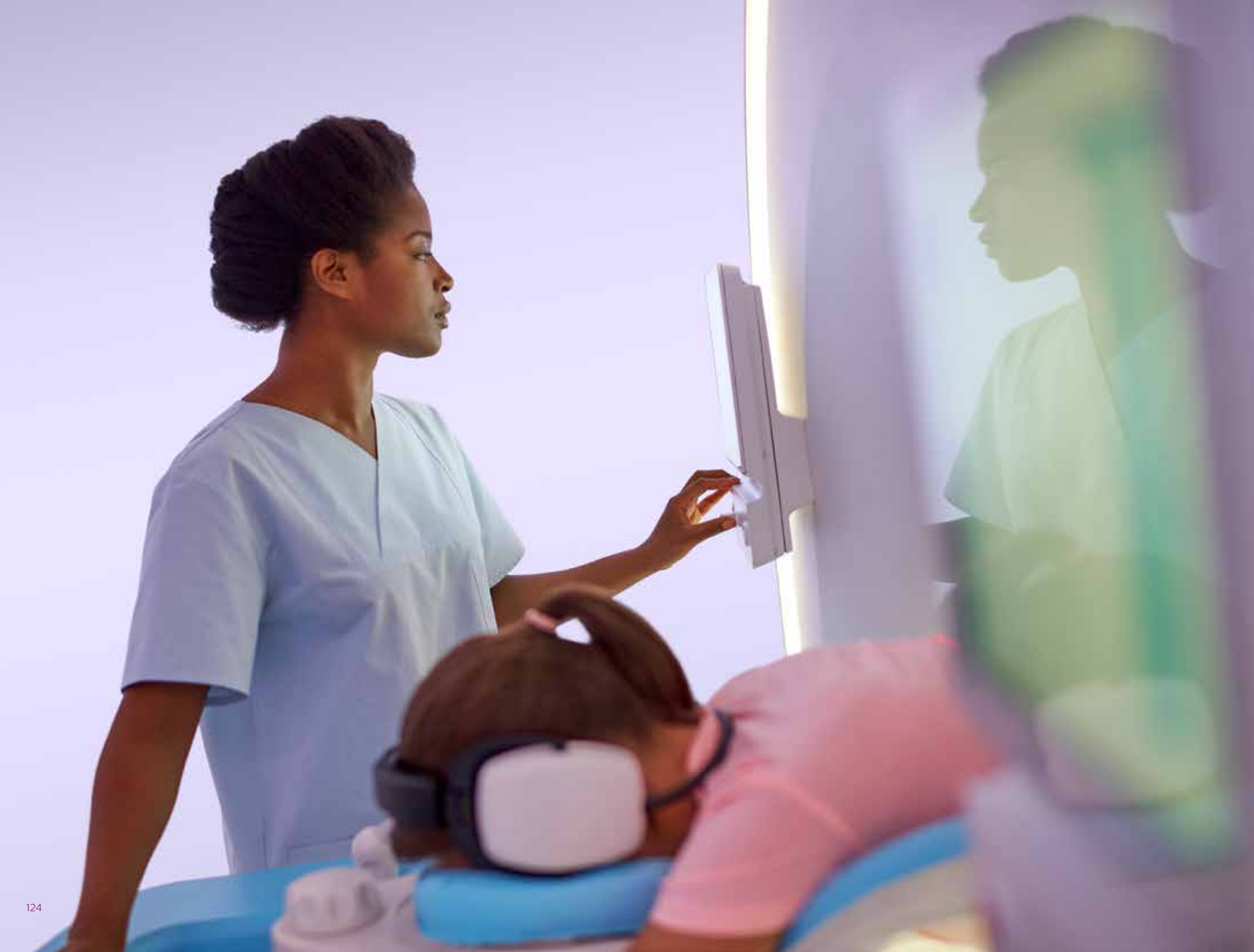
4D-THRIVE/BLISS

Accelerate dynamic breast imaging
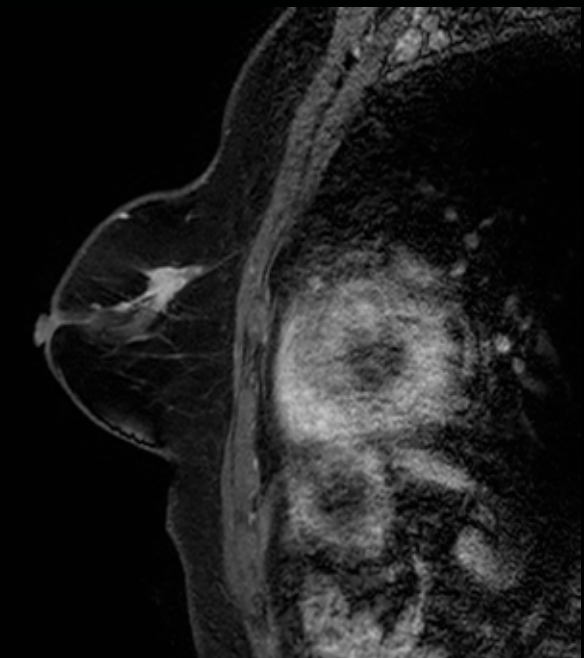
4D-THRIVE/BLISS is a time-resolved 3D technique to drastically accelerate dynamic breast imaging through the combination of a keyhole method with CENTRA and SENSE. Combines high spatial resolution with high temporal resolution to facilitate acquisition of multiple dynamic volumetric data sets per breath-hold.
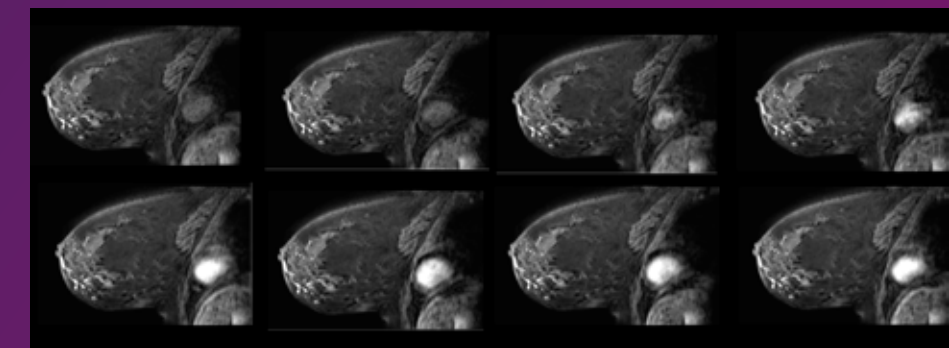
Accelerated, high resolution, sagittal 3D breast imaging

dS Liver Suite
Premium

dS Liver Suite Premium supports non-invasive liver fat fraction quantification and assessment of liver tissue stiffness.

mDIXON Quant brings noninvasive liver fat quantification by providing fat fraction maps of the whole liver with high accuracy and reproducibility. MR Elastography allows for a non-invasive assessment of differences in tissue stiffness of the liver in a fast breathhold scan. MR Elastography Extension delivers faster, more robust stiffness maps across larger regions in the liver. Image processing is fully integrated at the scanner with automated calculation of elastograms.
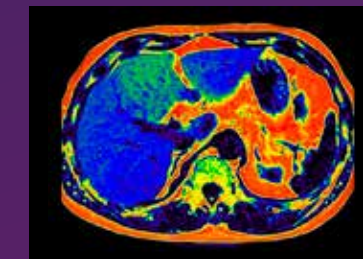
mDIXON Quant
Non-invasive liver fat fraction quantification
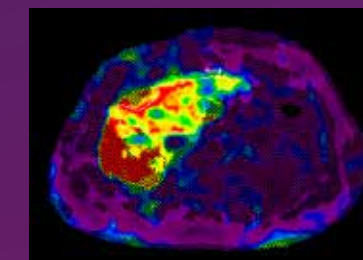
MR Elastography
Non-invasive assessment of liver tissue stiffness
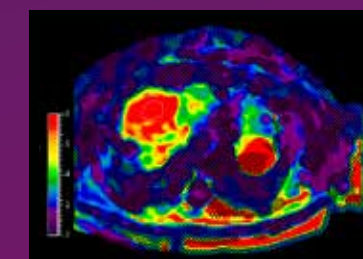
MR Elastography extension
More robust liver tissue stiffness maps

mDIXON Quant

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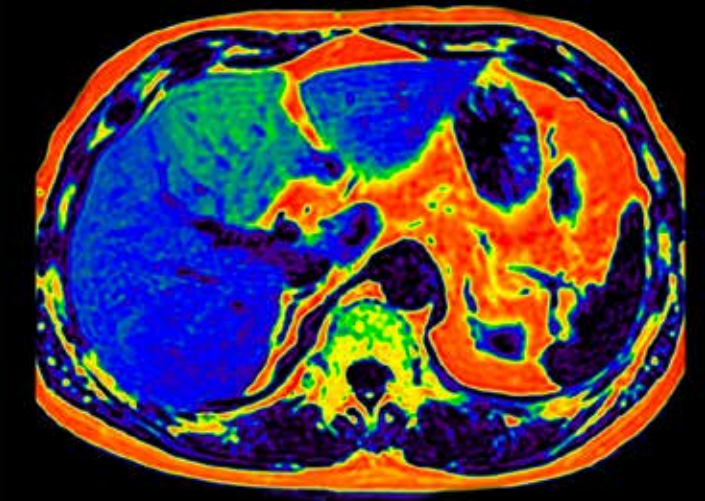
mDIXON Quant brings a fast and simple 3D procedure for non-invasive liver fat quantification by providing high quality 3D fat fraction maps of the whole liver, even for short T2*, with high accuracy (± 3.5%) and reproducibility (± 1.4%)[1] allowing you to expand your MRI capabilities. T2*/R2* relaxation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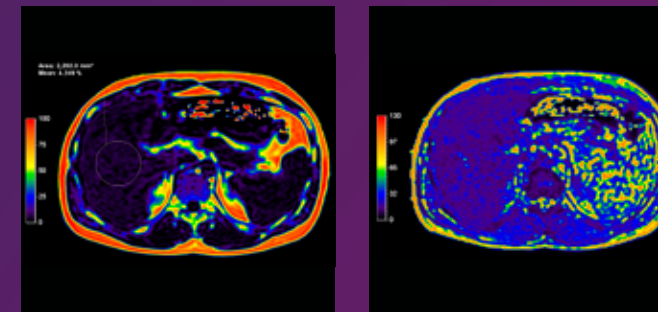
Fat fraction maps (left) and T2*/R2* relaxation maps (right)

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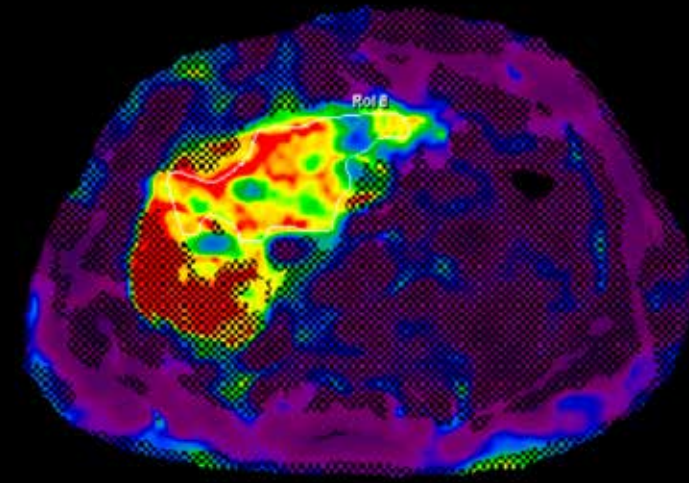
Non-invasive assessment of liver tissue stiffness
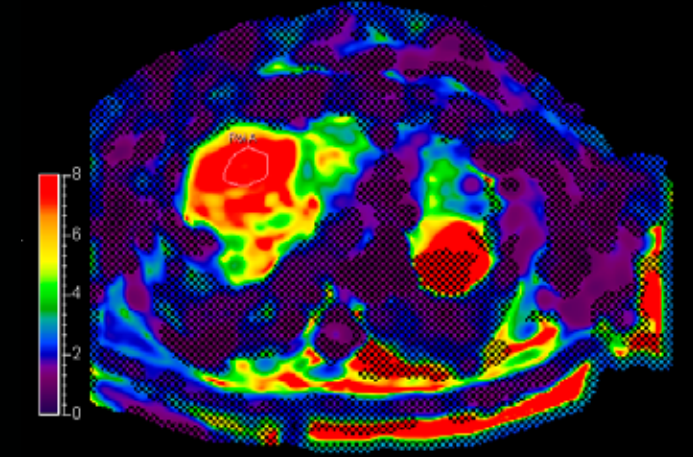
MR Elastography allows for a non-invasive assessment of differences in tissue stiffness of the liver in a fast breathhold scan providing trained physicians with additional input to help make informed decisions about treatment.
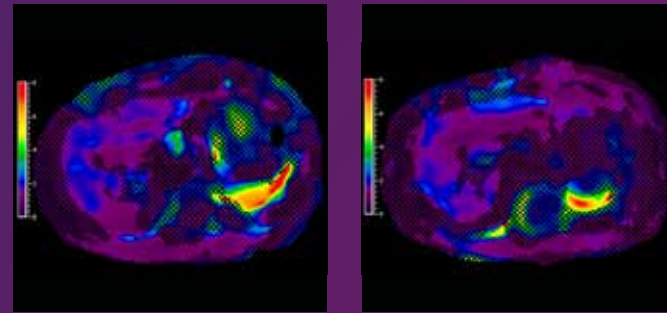
Elastograms reflecting tissue stiffness in kPa

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.

MR Elastography Extension

More robust liver tissue stiffness maps

The MR Elastography Extension has been developed to enhance diagnostic confidence by delivering faster, more robust stiffness maps across larger regions in the liver. With this new extension, MRE (SE-EPI) can be performed up to 8 times faster[1] and in a single breathhold, while delivering equal or better image confidence. The MR Elastography Extension supports you in getting consistent results for diverse patients. At high field strength the SE based MR Elastography Extension provides more robust stiffness maps, since the technique is more resistant to low T2* signal fall out, compared to FFE based MR Elastography. A non-invasive assessment of tissue stiffness of the liver can be SE based MR Elastography Extension allows for, with a slice coverage of 4-5 slices, in a single breathhold scan. While FFE based MR Elastography requires one breathhold per slice. Image processing is fully integrated at the scanner with automated calculation of elastograms, providing trained physicians with additional input to help make informed decisions about treatment.
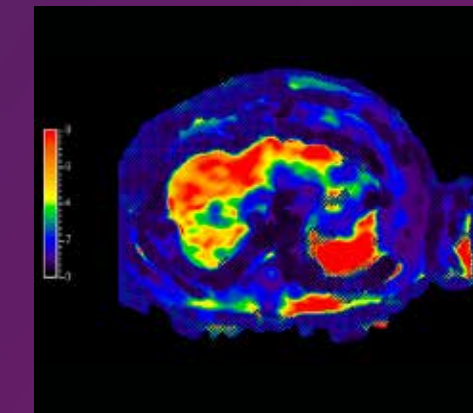
MRE, 4 slices in a single breath hold of 16 seconds
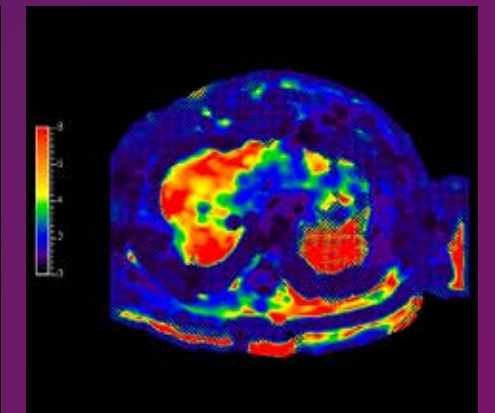
MRE, 8 slices in a single breath hold of 16 seconds

1 Compared to Philips MR Elastography (gradient echo), at 3.0T.

dS Pediatric Suite

dS Pediatric Suite exists of a comprehensive pack of pediatric coils and accessories.

dS Ped NeuroSpine coil is an open design 8-element coil for high resolution pediatric brain and spine imaging. dS Ped Torso coil delivers is a dedicated 8-element coil designed to provide excellent pediatric torso and cardiac imaging. Pediatric positioning pack consists of a subset of accessories designed to meet the needs of the smallest patients.

dS Ped NeuroSpine coil
High SNR for your pediatric brain and spine studies

dS Ped Torso coil
High SNR for your pediatric torso and cardiac studies

Pediatric positioning pack
Taking care of the smallest patients

dS Ped NeuroSpine coil
High SNR for your pediatric brain and spine studies

The dS Ped NeuroSpine 8ch coil is an open-design 8-element coil for high resolution pediatric brain and spine imaging. Specifically designed for neonates, but will accommodate pediatric patients up to 10kg. Open, cradle shaped design enables the operator to position and prepare the patient outside the examination room. Examinations of brain and spine can be performed without having to move the patient.
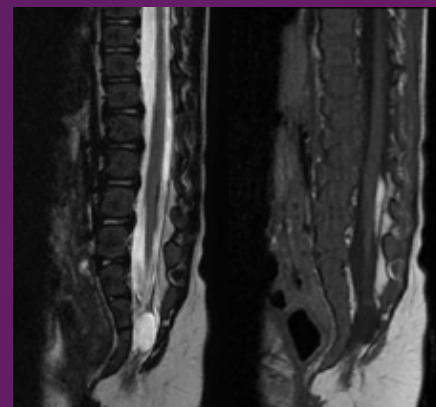
T2w and T1w Spine imaging

3D T1w Brain imaging

dS Ped Torso coil
High SNR for your pediatric torso and cardiac studies
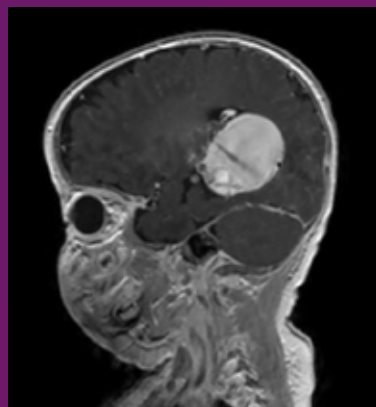
The dS Ped Torso coil is a dedicated 8-element coil designed to provide advanced pediatric torso and cardiac imaging. The coil is optimized for neonates, but will accommodate pediatric patients up to 10kg. Split design allowing the top of the coil to be taken off, enabling easy access to the patient. An insert cradle can be used for additional patient support. A surrounding mattress is available to accommodate larger patients.
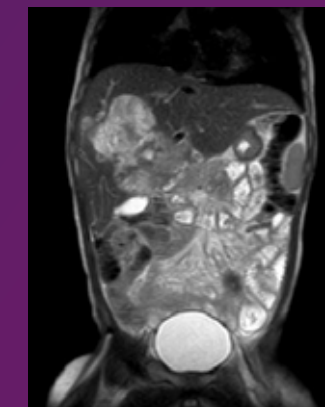
T2w abdominal imaging
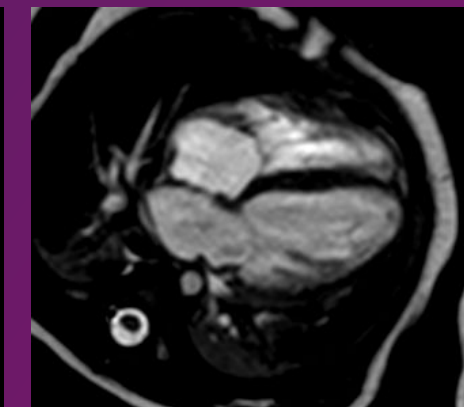
Cardiac cine imaging

Pediatric positioning pack

Taking care of the smallest patients

The Pediatric positioning pack for dStream systems consists of a subset of accessories designed to meet the needs of the smallest patients. Included is an anterior coil frame avoiding positioning of the dS Torso coil directly on the patient. Additionally a baby support pad, comfort pad, pediatric knee support and child elevation mattress are included in this package.

A la Carte

Next to all the previously mentioned bundles, there is also the option to choose the various software applications individually.
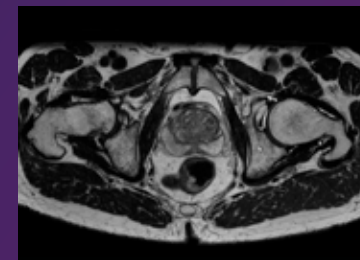
3D PelvisVIEW
View your 3D TSE imaging data in any plane
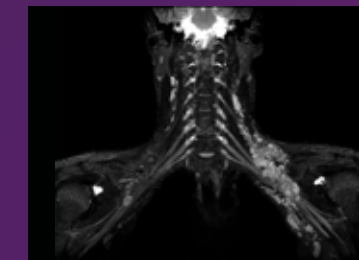
3D NerveVIEW
Review nerve plexus, non-invasively
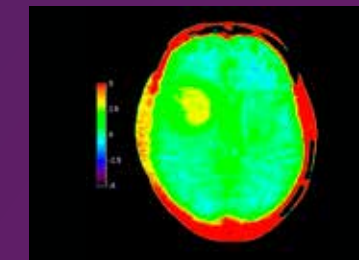
3D APT
Enhanced diagnostic confidence in neuro oncology

SyntAc
Exploring neuro-radiology with Synthetic MR imaging
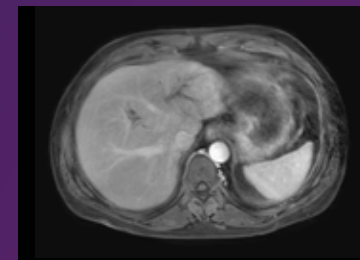
4D FreeBreathing
Multi-phase liver studies without breathholds

4D-TRANCE
Contrast-free imaging of brain vascular anatomy
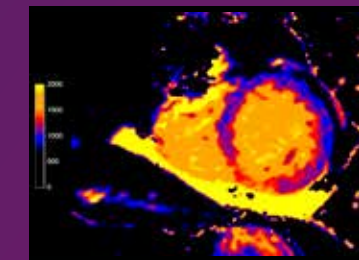
CardiacQuant extension
Flexibility in creation of T1 maps
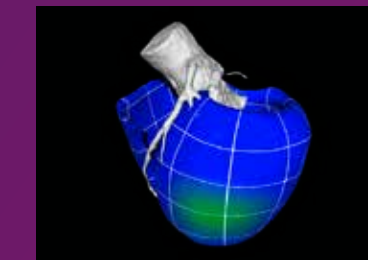
SENC
Identifying asymptomatic patients at risk of heart failure
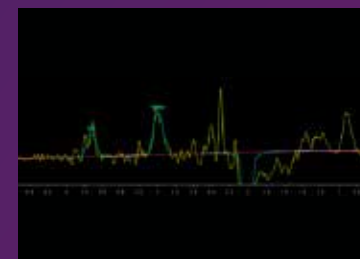
MEGA
Detection of additional metabolites
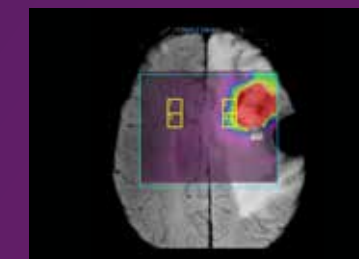
MR SpectroView
Review metabolite content based on 1H spectroscopy
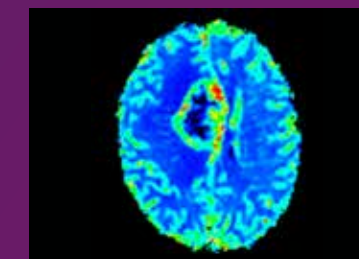
MR Permeability
Lesion characterization by reviewing vascular leakage

AV Cartilage Assessment
Visualize cartilage structures

3D PelvisVIEW

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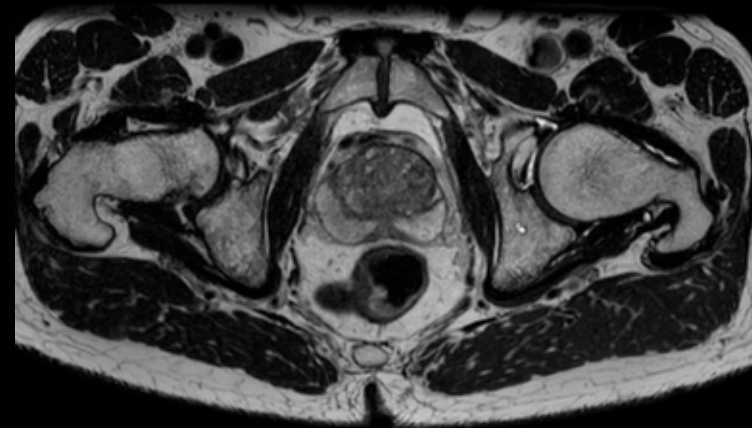
3D PelvisVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.
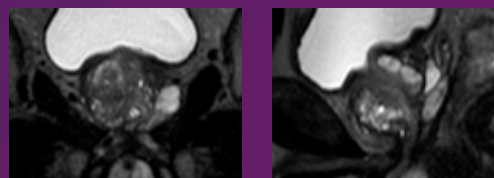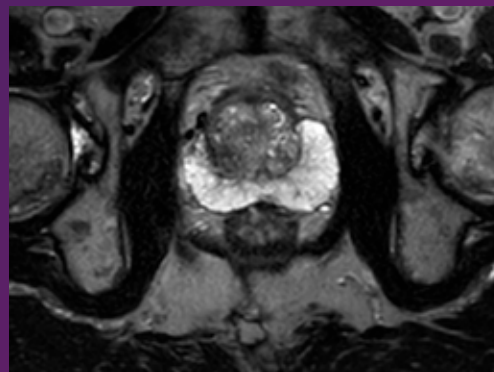

Data in multiple directions, in one scan

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.

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.
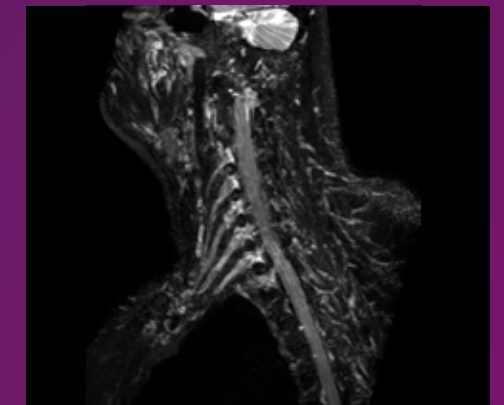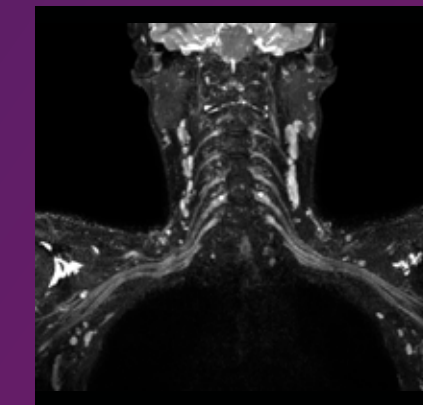
Improved visualization of the spinal nerve plexus

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

3D APT
## Enhanced diagnostic confidence in neuro oncology
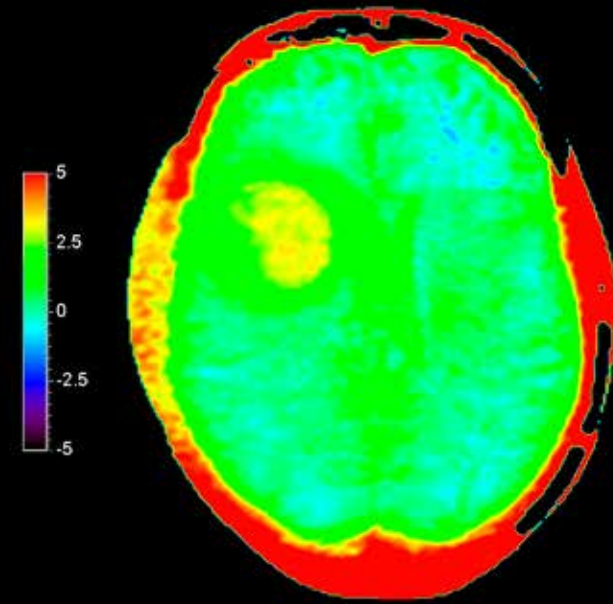
SyntAc
Exploring neuro-radiology with synthetic MR imaging
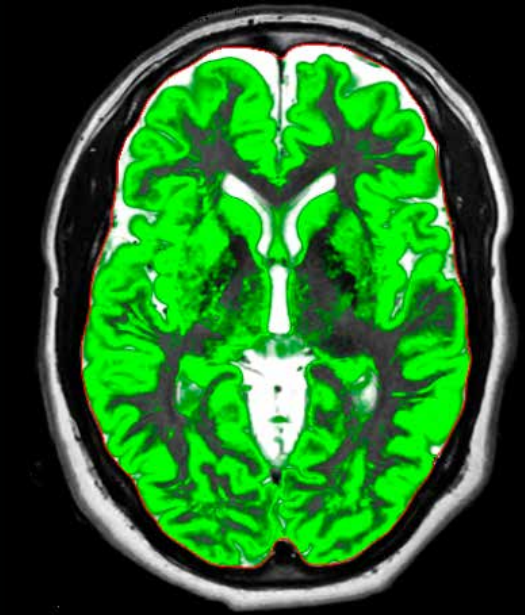
3D APT (Amide Proton Transfer) is a new unique, contrast-free, brain MR imaging method addressing the need for more confident diagnosis in neuro oncology. 3D APT uses the presence of endogenous cellular proteins, to produce an MR signal that directly correlates with cell proliferation, a marker of tumoral activity. 3D APT can support trained medical professionals in differentiating low grade from high grade gliomas and, in differentiating tumor progression from treatment effect[1,2]
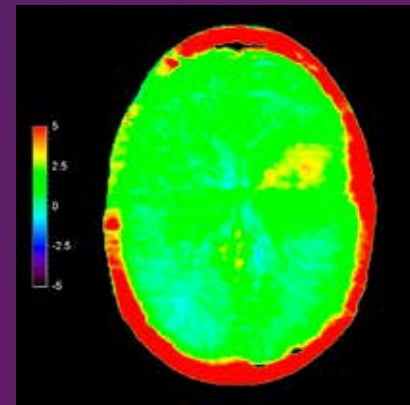
3D APT image

Additional information:

· 3D APTw images are calculated automatically and displayed as color maps

· Whole glioma coverage can be obtained with a resolution of 2.0 x 2.0 x 5.0 mm

SyntAc allows to perform MR imaging with a single quantification scan. The acquisition time can be decreased thanks to compatibility with Philips SmartSpeed and compatibility with Compressed SENSE acceleration technology. The resulting data can be used as input for advanced third party processing software[1] to synthesize MR images with different contrasts, brain parenchyma fraction maps and/or brain segmentation maps.

MR images with different contrasts, retrieved from one single quantification scan

1 Togao et al. (2014) Neuro-Oncology
2 Park KJ et al. (2016) Eur Radiol

4D FreeBreathing

Multi-phase liver studies without breathholds
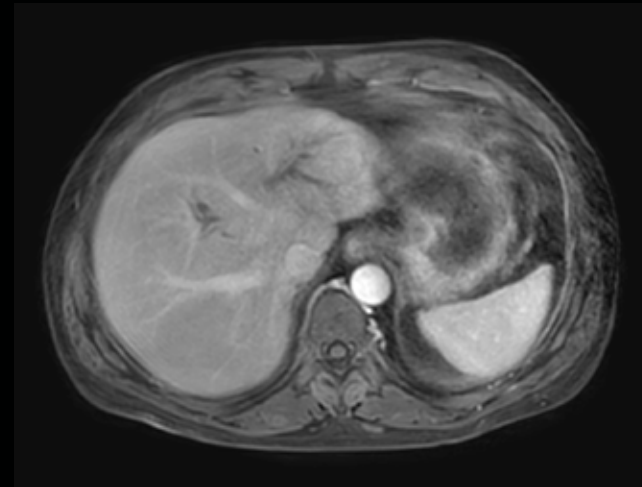
Multi-phase contrast-enhanced MRI studies are used to diagnose liver lesions, but many patients are simply not capable of performing multiple breathholds. With 4D FreeBreathing, you can now offer free-breathing MRI liver to a broader population, while improving imaging confidence and the patient experience. This allows you to address patients who have difficulty holding their breath or find it difficult to follow breathing instructions, like the rising elderly segment that has hearing loss, cognitive impairment or respiratory difficulties, as well as children and sedated patients.

4D FreeBreathing allows you to obtain excellent image quality from multi-phase liver studies performed without breathholds. This application is motion robust through its built-in respiratory soft gating and compatibility with high precision external sensors, like VitalEye. As a result, 4D FreeBreathing delivers reliable results that can improve imaging confidence[1]. You can easily define variable timings for multiple phases to seamlessly fit 4D FreeBreathing into your current workflow. Real-time reconstruction allows you to view the progress of images as they are acquired to monitor the quality of the results. To provide easy workflow, you can specify the number of temporal phases to be reconstructed. 4D FreeBreathing provides dynamic information with a temporal resolution[2] down to 3 seconds per phase.
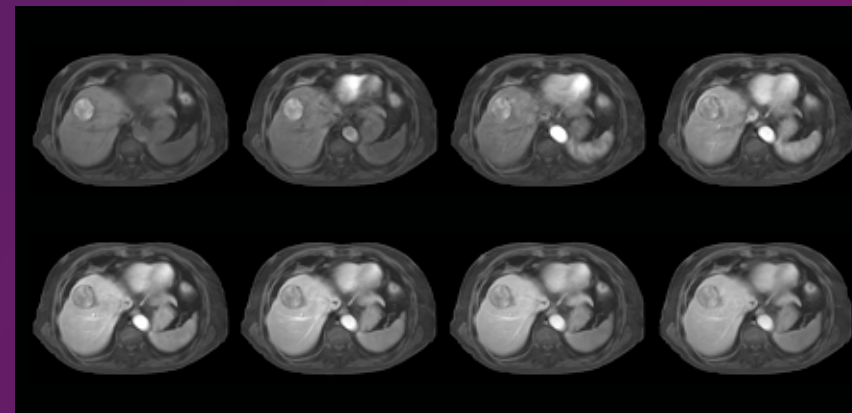
Multi-phase contrast-enhanced MRI liver study

1 Compared to eTHRIVE in subjects unable to hold their breath.
2 Dynamics are reconstructed at prescribed temporal resolution and will contain data shared from earlier and later time points.

4D-TRANCE

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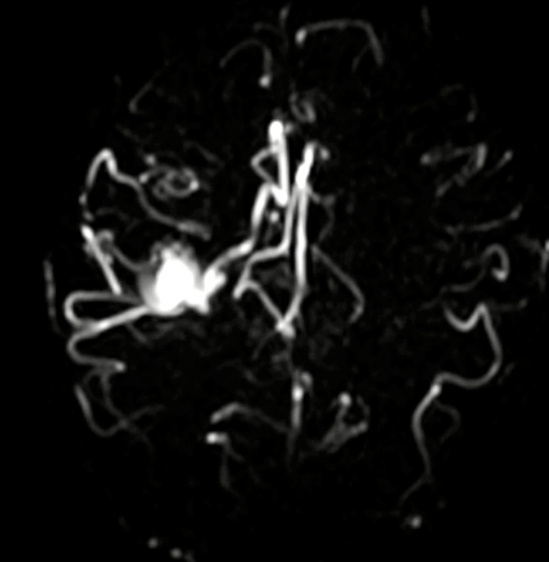
4D-TRANCE is a time-resolved technique for non-contrast angiography, promoting patient comfort and enabling you to evaluate the patency of the vascular anatomy in the brain using endogenous contrast with MIP visualization of multiple phases. 4D-TRANCE enables high temporal resolution down to 160 msec.
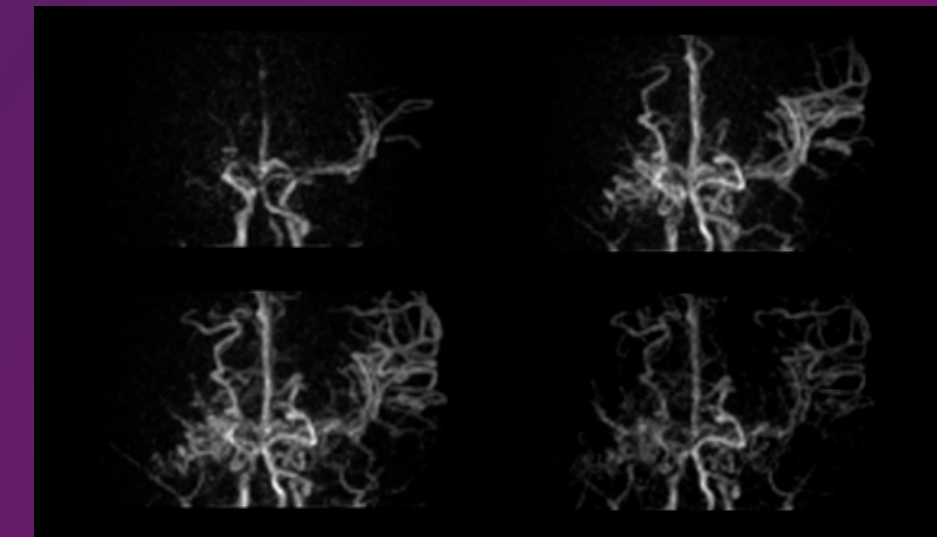

Non-contrast time-resolved angiography of the brain

CardiacQuant Extension
Flexibility in creation of T1 maps

SENC
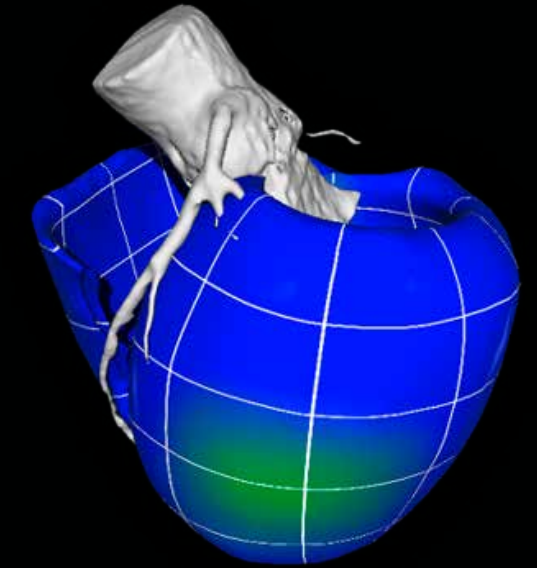## Identifying asymptomatic patients at risk of heart failure[1]
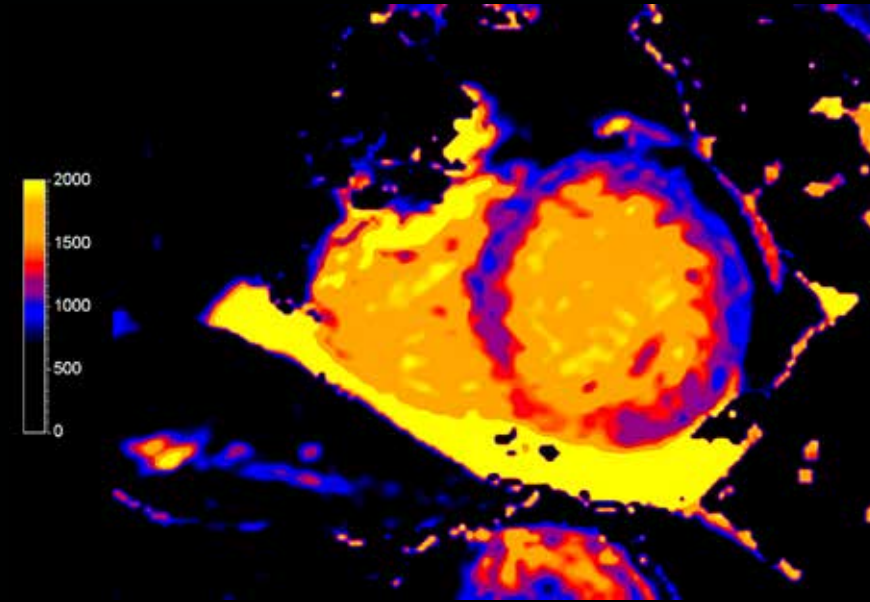
CardiacQuant Extension is an optional plugin which adds flexibility for the creation of T1 maps. It allows the option of user defined T1 mapping schemes as alternatives for the predefined "native" or "enhanced" schemes as provided by CardiacQuant.
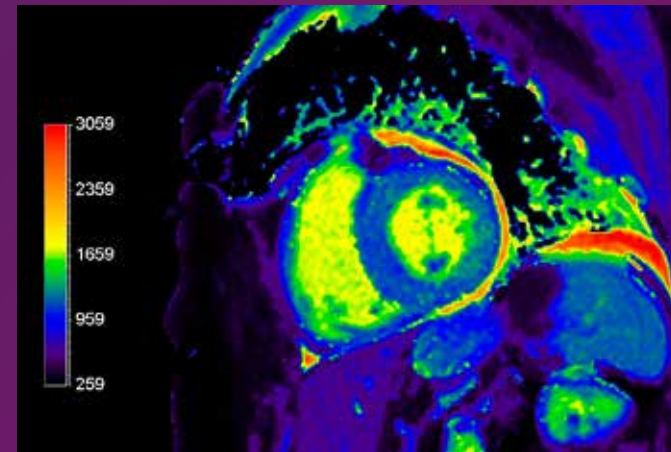
T1 map

SENC images are processed through Myocardial Solutions software to measure early and subtle changes in the heart function. The strain-encoded (Fast-SENC) time resolved images provided by Philips are used to extract the quantitative strain information per voxel using third party Myocardial Solutions (MyoStrain) software which generates a clinical report.

With the combination of Philips Fast-SENC and MyoStrain early dysfunction of heart failure can be detected across 48 segments of the heart1 in 10 minutes.

Measure early and subtle changes in the heart function

1. Due to image processing through Myocardial Solutions software. Korosoglou G, et al. ESC Heart Failure. 2019 Aug;6(4):548–602

MEGA
Detection of additional metabolites

MR SpectroView
Review metabolite content based on 1H spectroscopy
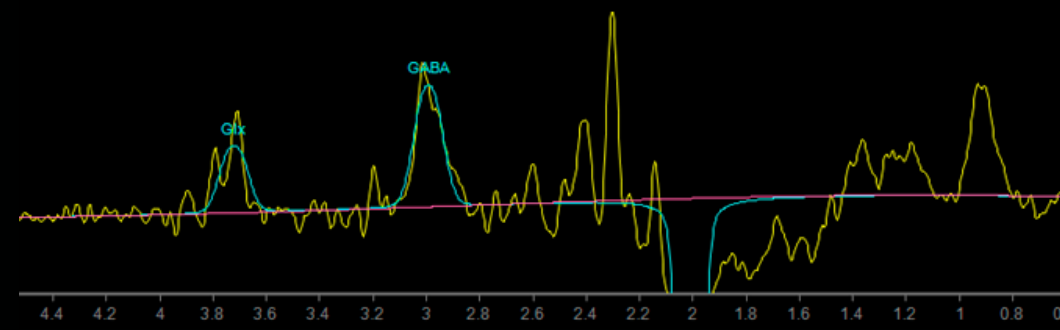
MEGA improves spectroscopy by revealing spectral peaks of interest which would otherwise remain hidden. It also allows detection and relative quantification of J-coupled metabolites such as gamma-aminobutyric acid (GABA) by automatically removing the spectral overlap from other metabolites. (In conventional spectroscopy, removing spectral overlap is only possible with spectral editing.) Frequency-selective RF pulses are included to manipulate the evolution of J-coupled MR signals. In addition, subtraction of on- and off-resonance spectra is used for relative quantification of J-coupled metabolites.
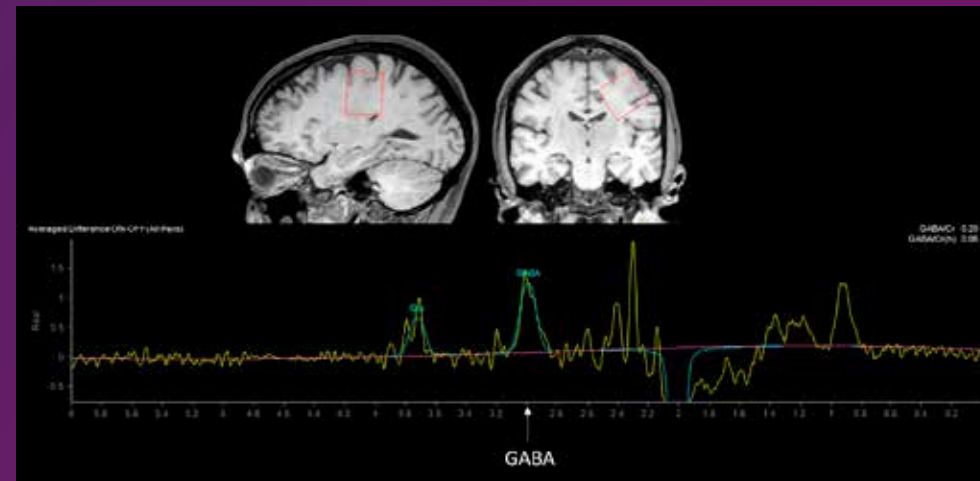
Detection of GABA with single voxel MEGA MR Spectroscopy
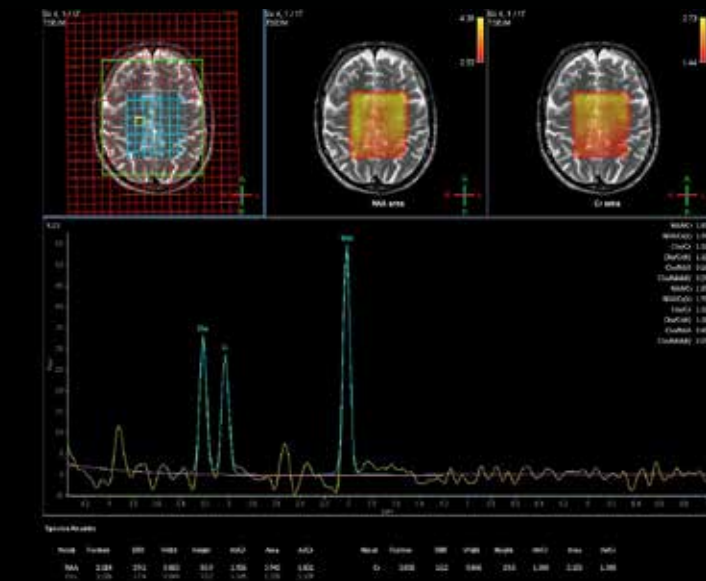
MR SpectroView is a task-guided application providing hydrogen single voxel spectra as well as metabolic and ratio maps. It automatically identifies the anatomy to preselect appropriate metabolites or supports user-defined combination of metabolites. Numerical information about metabolites is displayed. Metabolite and ratio maps are provided as color overlay on anatomical images or mini spectra on a voxel by voxel basis. Multiple voxels can be selected for spectral comparison.
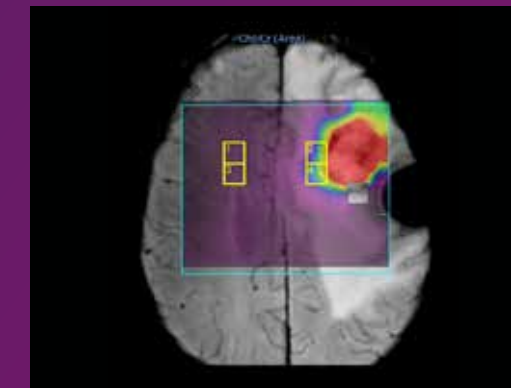
Spectroscopic imaging

MR Permeability
Lesion characterization by reviewing vascular leakage

AV Cartilage Assessment

Visualize cartilage structures
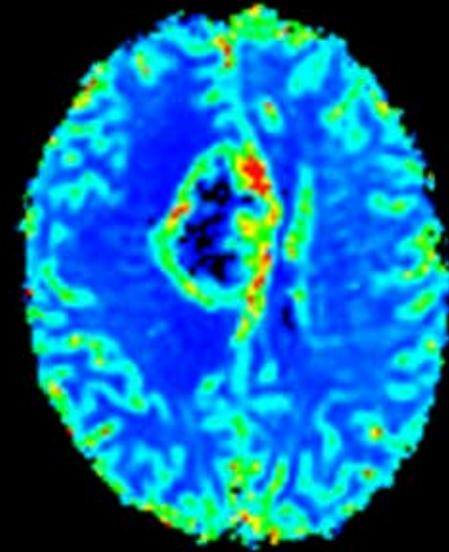
MR Permeability allows to measure the leakage of gadolinium chelates into the extra-vascular extracellular space (EES). Designed to visualize T1 weighted DCE 3D datasets and assist in analyzing the tissue response, the package supports the computation of parametric maps such as Ktrans, Kep, Ve and Vf. Its use plays an important role in oncology. The application has been validated for prostate and brain cancer.
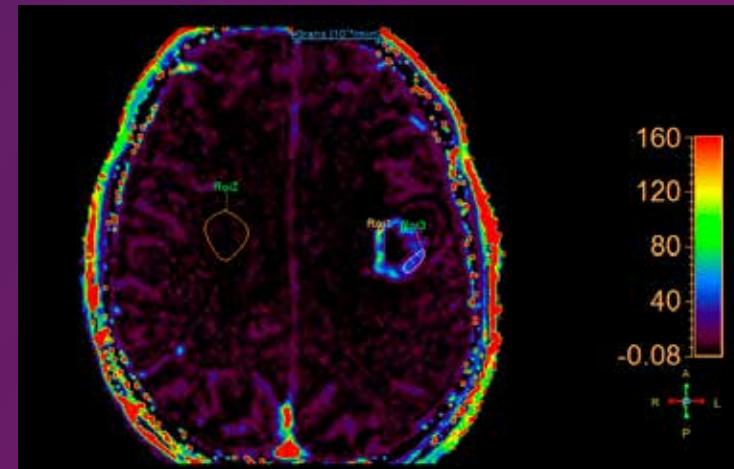
Parametric map helping to analyze tissue response
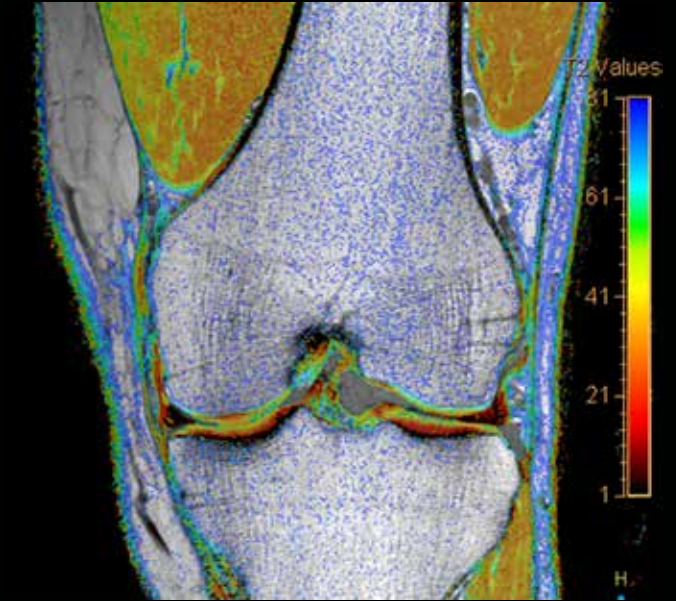
AV Cartilage Assessment enables the advanced visualization of cartilage structures and provides tools to support determination of the degradation of the cartilage. Quantitative analysis of T2 relaxation time displayed via integrated color-coded T2 maps. Positioning of cartilage-shaped, layered region of interest is used to assess variation of T2 values across the cartilage depth to determine the degradation of the cartilage.
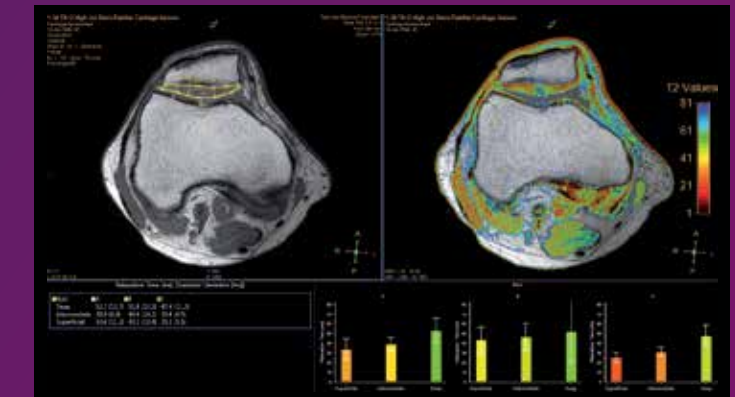
MR Echo accumulation

Index clinical applications

www.philips.com/mrclinicalapplications