PHILIPS

Magnetic Resonance

# 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.


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

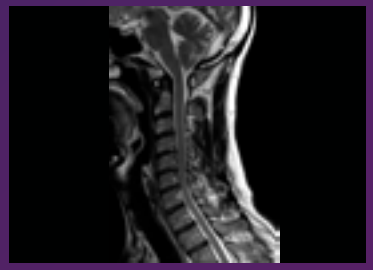
# **MR** Workspace

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.

1 According to the definition of AI from the EU High-Level Expert Group.
2 The addition of step-by-step guidance and automation of routine and complex post-processing applications can now be performed by the technologist on the console, saved via bookmark functionality, and handed off to the radiologist, which reduces time to results.

# **dS Scan Suite** Essential

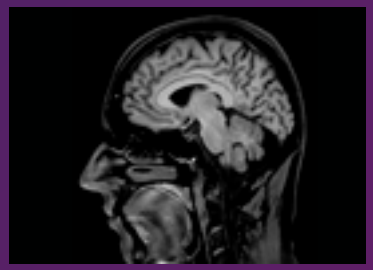


**ScanTools Pro**
Clinical imaging performance

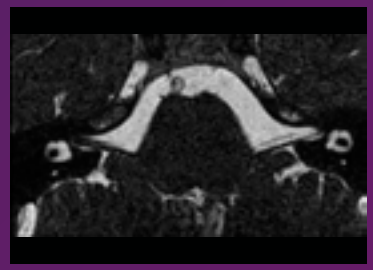
**AutoVoice**
Guiding your patients through the MR examination

**ComforTone**
Reduce acoustic noise and enhance MR experience

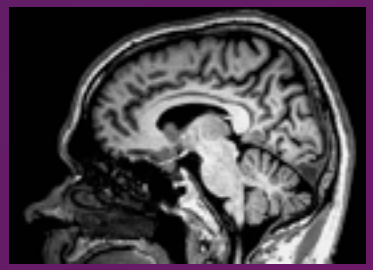
**ScanWise Implant**
A key to confidence with MR Conditional implants



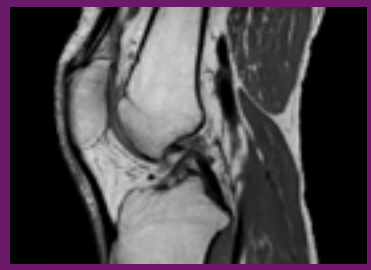
**3D BrainVIEW**
View your 3D TSE imaging data in any plane



**bFFE XD**
Expanding clinical applications of balanced FFE



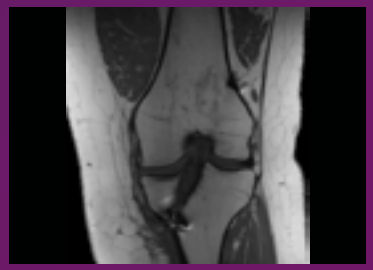
**3D Non-selective**
Fast and robust large volume 3D FFE imaging



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

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

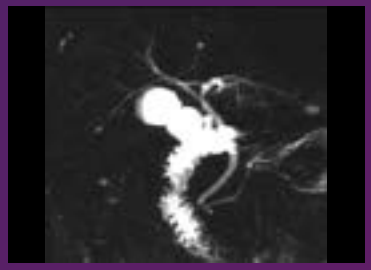
**2k imaging**
High resolution imaging



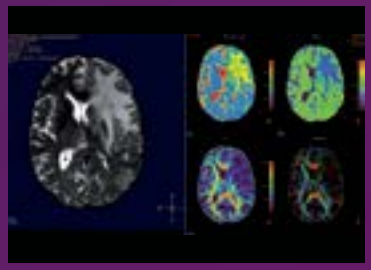
**O-MAR**
Efficient near-metal soft tissue and bone imaging

# **AV MR** Essential

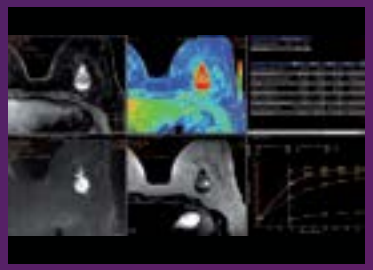
**MR MobiView**
Easy viewing of multi-station studies



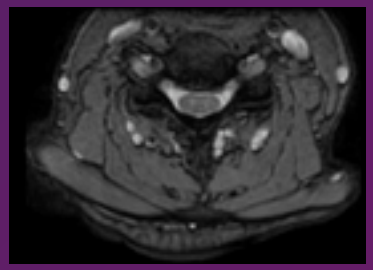
**MR Subtraction**
Perform basic calculations between two volumes



**MR Diffusion**
Analyze diffusion and anisotropic properties of tissue



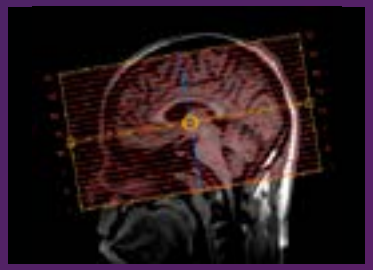
**MR T1 Perfusion**
Review blood supply characteristics



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

# SmartExams

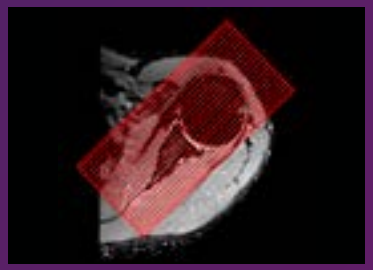
Plus



**SmartExam Brain**
Standardized exams forconsistent MRI results

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

Pro



**SmartExam Shoulder**
Standardized exams for consistent MRI results

**SmartExam Knee**
Standardized exams for consistent MRI results

# Smart Workflow

## Plus

**VitalScreen**
Guidance at your fingertips

**SmartExam Brain**
Standardized exams forconsistent MRI results

## Pro

**VitalScreen**
Guidance at your fingertips

**SmartExam Brain**
Standardized exams forconsistent MRI results

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

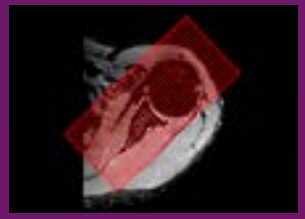
## Premium

**VitalScreen**
Guidance at your fingertips

**VitalEye**
Touchless respiratory-triggering

**SmartExam Brain**
Standardized exams forconsistent MRI results

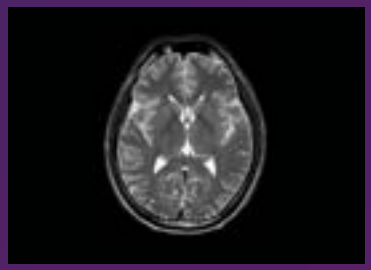
**SmartExam Spine**
Standardized exams for consistent MRI results



**SmartExam Shoulder**
Standardized exams for consistent MRI results

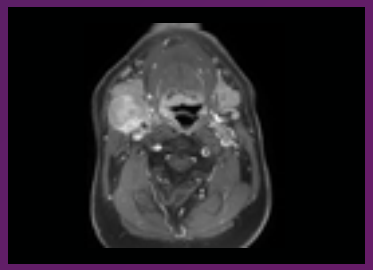
**SmartExam Knee**
Standardized exams for consistent MRI results

# **SmartSpeed** Plus

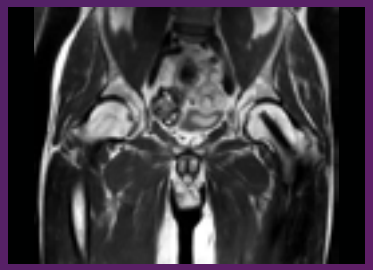


SmartSpeed Neuro/Spine

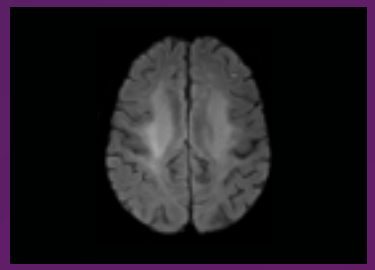
SmartSpeed MSK



SmartSpeed MotionFree

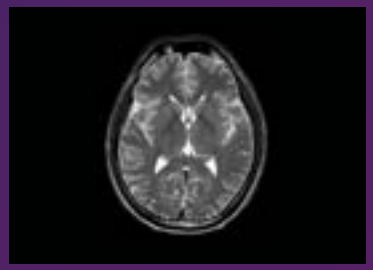


SmartSpeed Implant



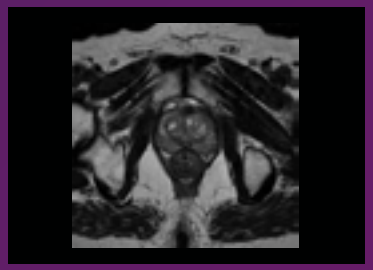
SmartSpeed DWI

# **SmartSpeed** Pro Body

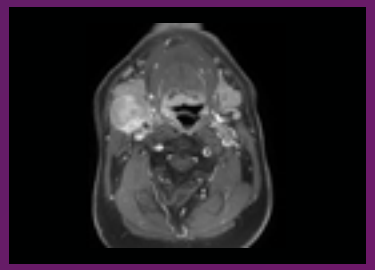


SmartSpeed Neuro/Spine

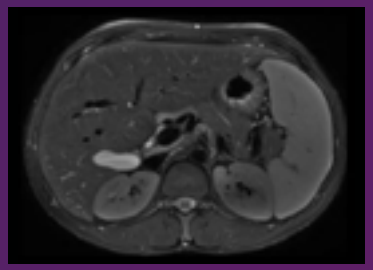
SmartSpeed MSK



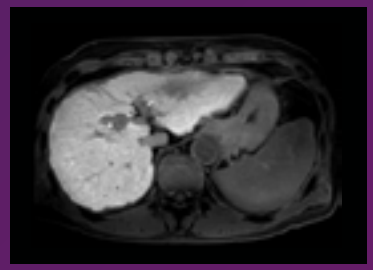
SmartSpeed Body



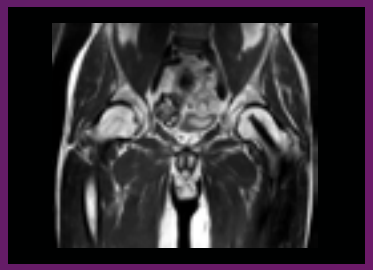
SmartSpeed MotionFree



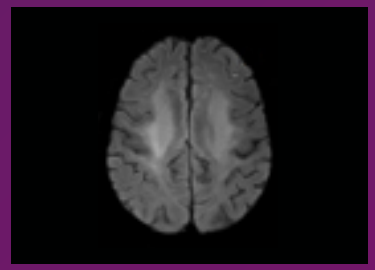
SmartSpeed MotionFree Body



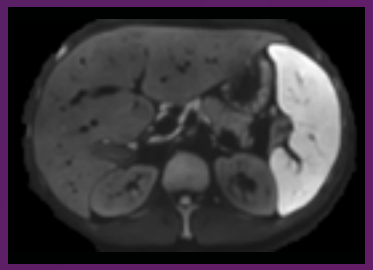
SmartSpeed 3D FreeBreathing



SmartSpeed Implant

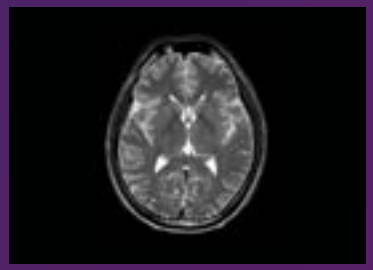


SmartSpeed DWI



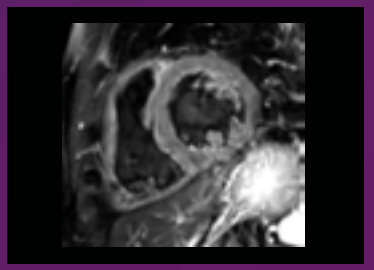
SmartSpeed DWI Body

# **SmartSpeed** Pro Cardiac

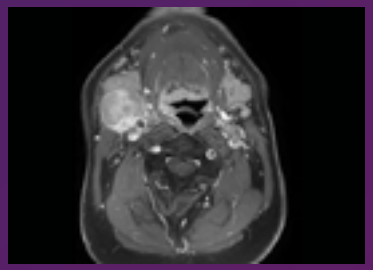


SmartSpeed Neuro/Spine

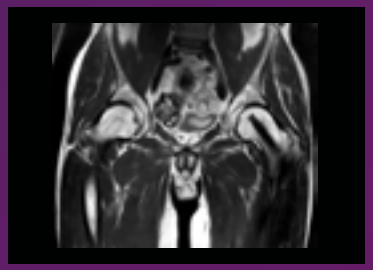
SmartSpeed MSK



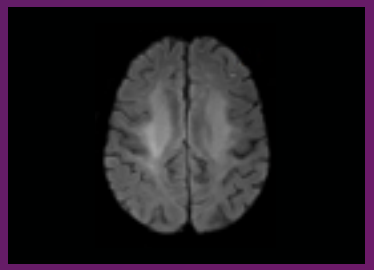
SmartSpeed Cardiac



SmartSpeed MotionFree

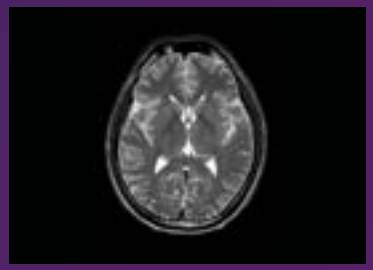


SmartSpeed Implant



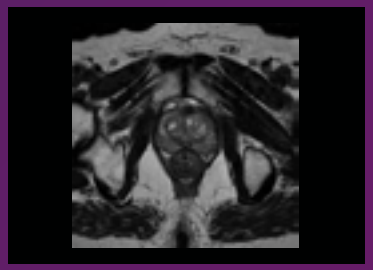
SmartSpeed DWI

# **SmartSpeed** Premium

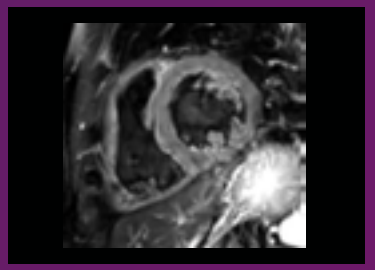


SmartSpeed Neuro/Spine

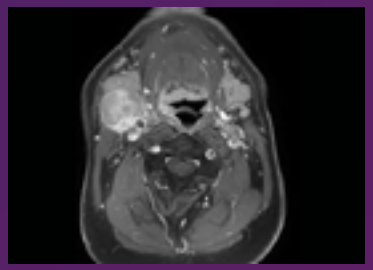
SmartSpeed MSK



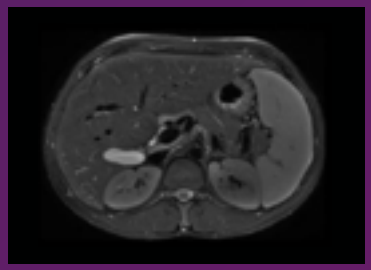
SmartSpeed Body



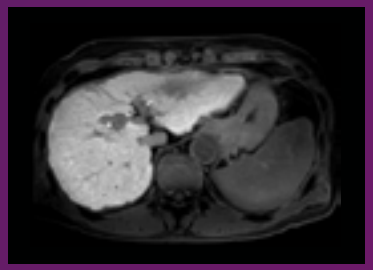
SmartSpeed Cardiac



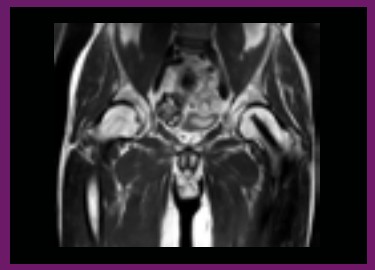
SmartSpeed MotionFree



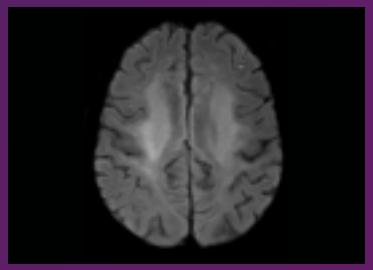
SmartSpeed MotionFree Body



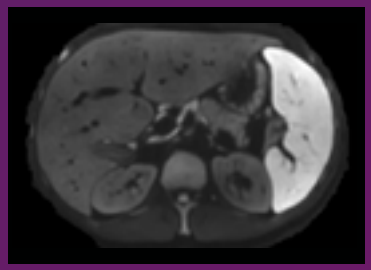
SmartSpeed 3D FreeBreathing



SmartSpeed Implant



SmartSpeed DWI

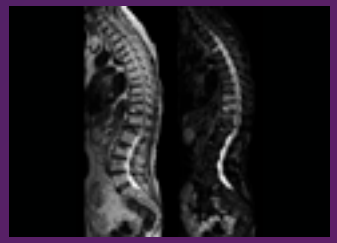


SmartSpeed DWI Body

# dS IQ Suite

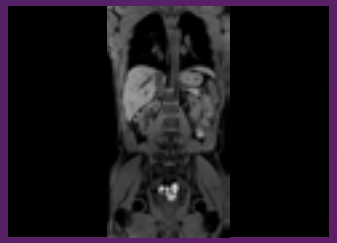
## Plus

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

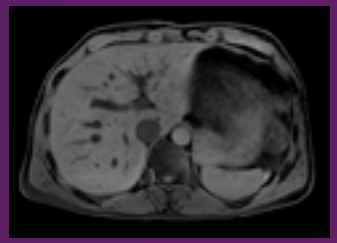


**mDIXON XD TSE**
Replace all your FatSat by one single fat-free imaging solution

## Pro



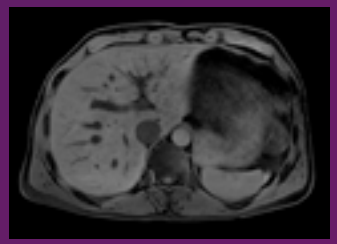
**mDIXON XD FFE**
Improve your fat-free imaging performance



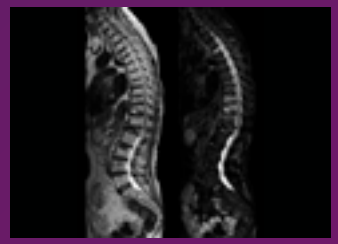
**3D VANE XD**
Free breathing abdominal imaging

## Premium

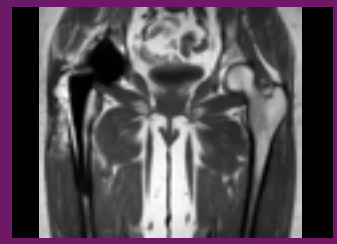
**MultiVane XD**
Motion-free imaging in short scan time



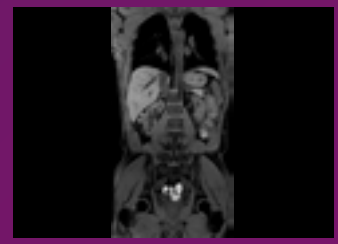
**3D VANE XD**
Free breathing abdominal imaging



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



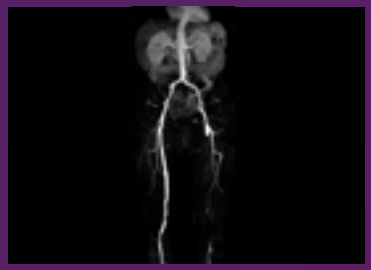
**O-MAR XD**
Efficient near-metal soft tissue and bone imaging



**mDIXON XD FFE**
Improve your fat-free imaging performance

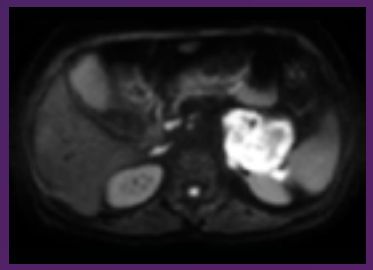
# dS Vascular Suite Pro

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

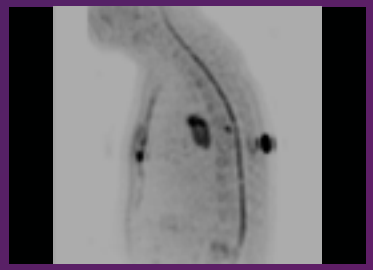


**mDIXON XD MultiStation**
Non-subtraction peripheral MR Angiography

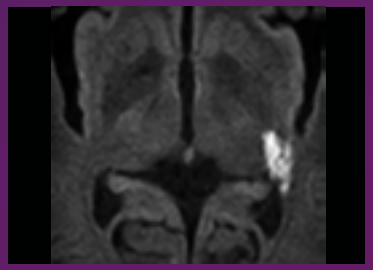
# **dS Diffusion Suite** Pro



**Diffusion Excellence Pack**
Step up your
diffusion performance

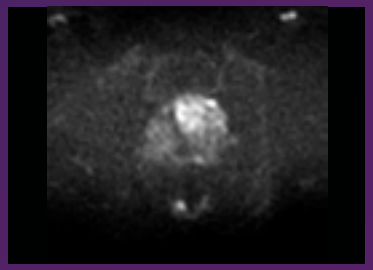


**DWI XD TSE**
Speed up and improve the
quality of your diffusion TSE



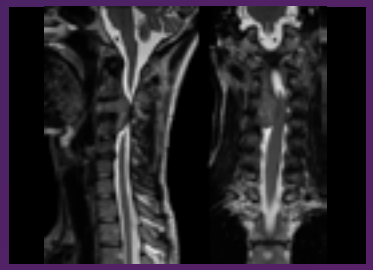
**Zoom Diffusion**
Small FOV diffusion imaging for
improved image quality

# **AV Onco Diffusion** Pro

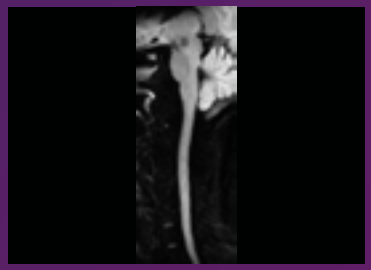


**Advanced Diffusion Analyses**
Calculate and generate diffusion maps

# **dS Spine Suite** Pro



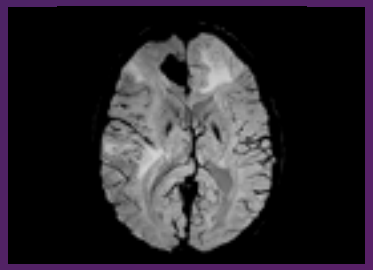
**3D SpineVIEW**
View your 3D TSE imaging data in any plane



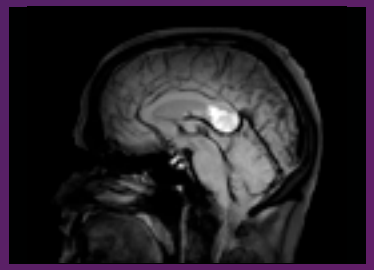
**IRIS Zoom**
Improved small FOV spine diffusion imaging

# dS Neuro Suite

## Plus

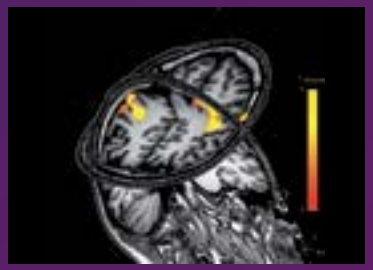


**SWIp**
Exquisite susceptibility contrast



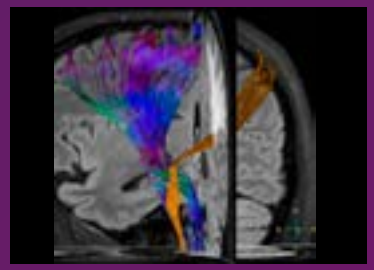
**Black Blood imaging**
Enhance your diagnostic confidence for brain imaging

## Pro

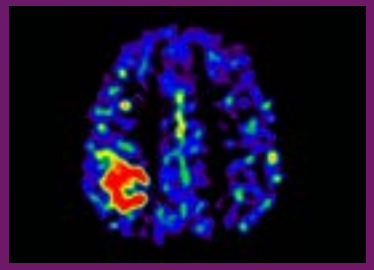


**Bold**
Motion-free imaging in short scan time

**DTI FiberTrak**
Fast, easy clinical fiber tracking

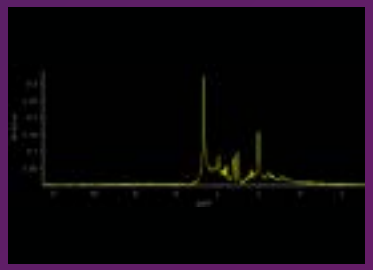


**FiberTrak Extension**
High definition fiber tracking in the brain or spine

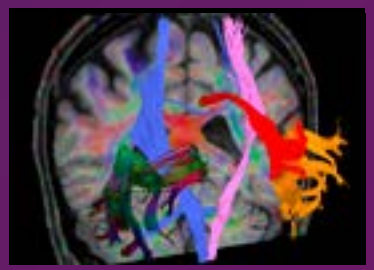


**3D ASL**
Reproducible contrast-free brain perfusion

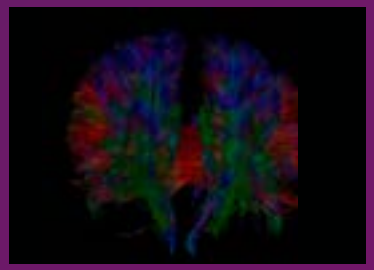
## Premium



**Spectroscopy XD**
More precise and more robust MR brain spectroscopy



**MultiBand SENSE**
High acceleration for your fMRI and DTI sequences

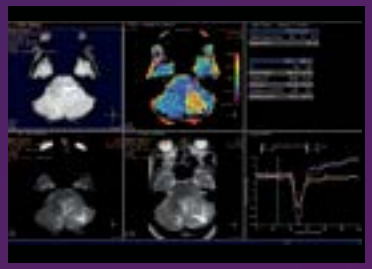


**NeuroScience**
Explore brain connectivity

**NeuroScience extension**
Extend your diffusion MRI studies

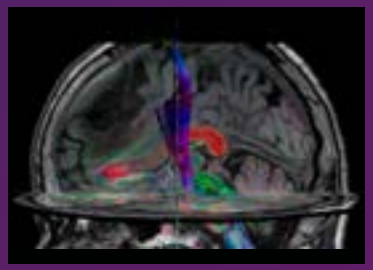
# AV Neuro

Plus



**MR Neuro Perfusion**
MR parametric brain analysis

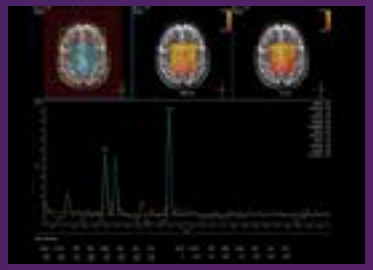
Pro



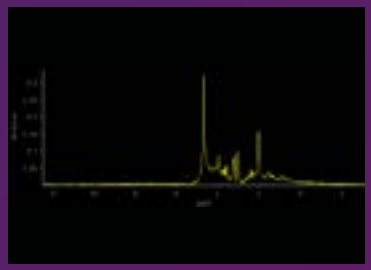
**MR FiberTrak**
Visualization of white matter tracts

**MR iViewBold**
Real-time functional activation maps

# **dS Spectro Suite** Pro



**Spectroscopy**
Fully integrated
proton spectroscopy

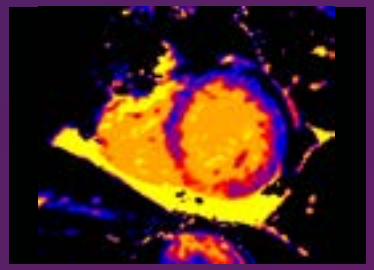


**Spectroscopy XD**
More precise and more
robust spectroscopy

# dS Cardiac Suite

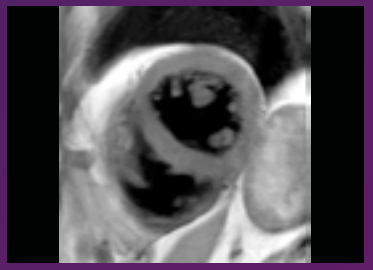
Plus

**Cardiac Expert**
Expand your cardiac
MR functionality

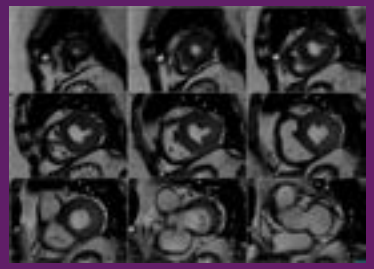


**CardiacQuant**
Non-invasive assessment
of myocardial tissue

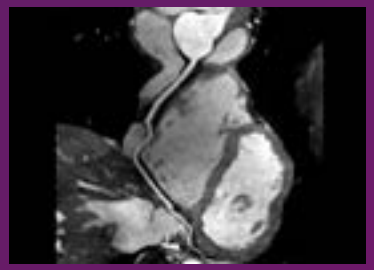
Pro



**Cardiac Expert extension**
Fast CMR methods for
anatomy, function and more

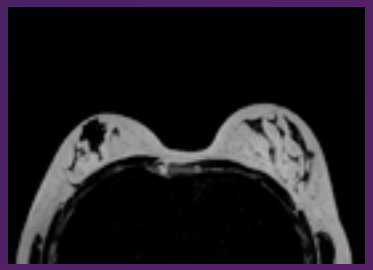


**k-t BLAST**
Accelerate your cardiac studies



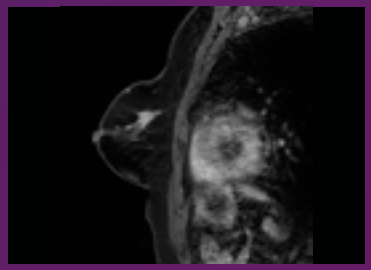
**Coronary Acquisition**
Perform non-invasive imaging
of coronary arteries

# **dS Breast Suite** Pro



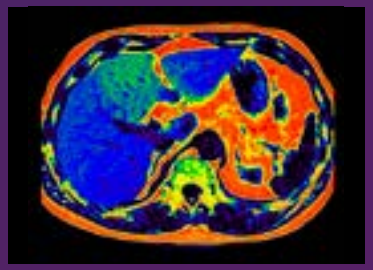
**3D BreastVIEW**
View your 3D TSE imaging data in any plane

**SmartExam Breast**
Consistent fat suppression for every patient

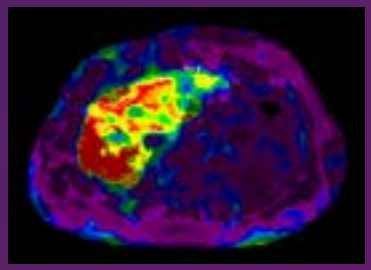


**4D-THRIVE/BLISS**
Accelerate dynamic breast imaging

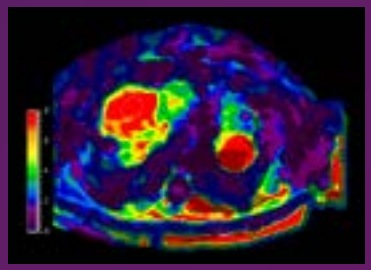
# **dS Liver Suite** Premium



**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

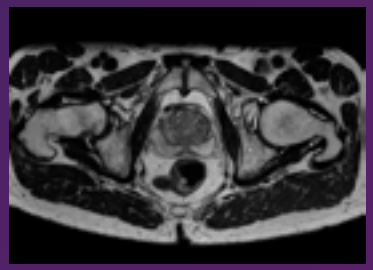
# dS Pediatric Suite

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

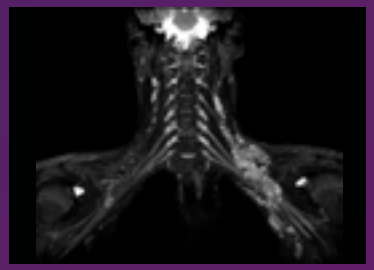
**dS Ped Torso coil**
High SNR for your pediatric torso and cardiac studies

**Pediatric positioning pack**
Taking care of the smallest patients

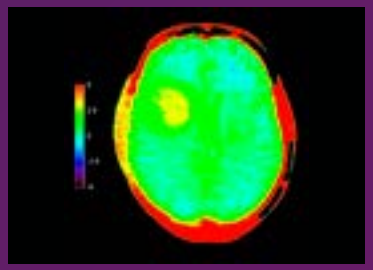
# A la Carte



**3D PelvisVIEW**
View your 3D TSE imaging data in any plane

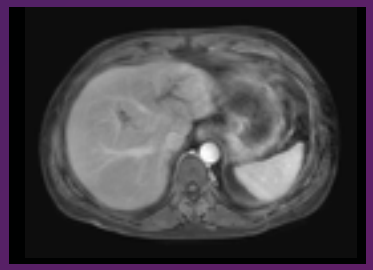


**3D NerveVIEW**
Review nerve plexus, non-invasively

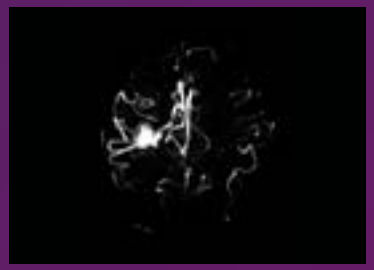


**3D APT**
Enhanced diagnostic confidence in neuro oncology

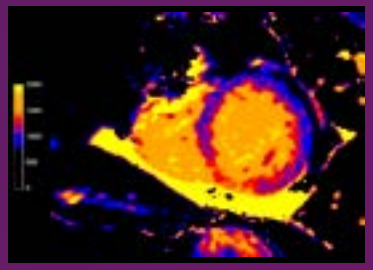
**SyntAc**
Exploring neuro-radiology with Synthetic MR imaging



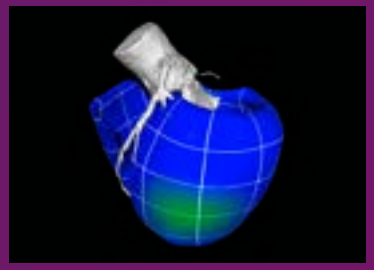
**4D FreeBreathing**
Multi-phase liver studies without breathholds



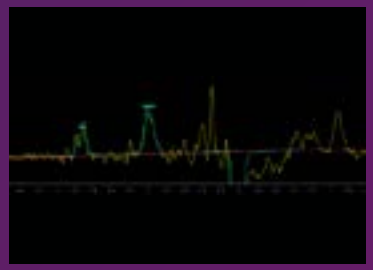
**4D-TRANCE**
Contrast-free imaging of brain vascular anatomy



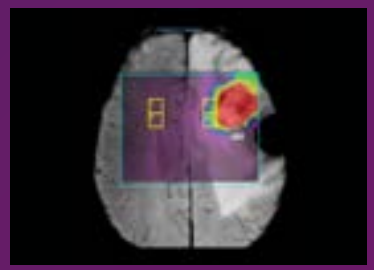
**CardiacQuant extension**
Flexibility in creation of T1 maps



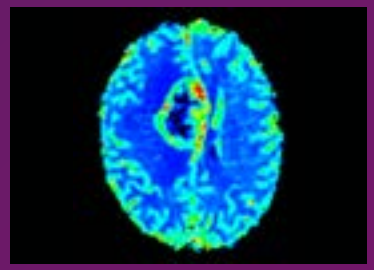
**SENC**
Identifying asymptomatic patients at risk of heart failure



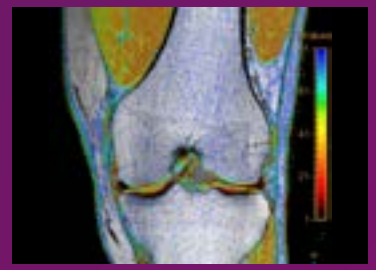
**MEGA**
Detection of additional metabolites



**MR SpectroView**
Review metabolite content based on 1H spectroscopy



**MR Permeability**
Lesion characterization by reviewing vascular leakage

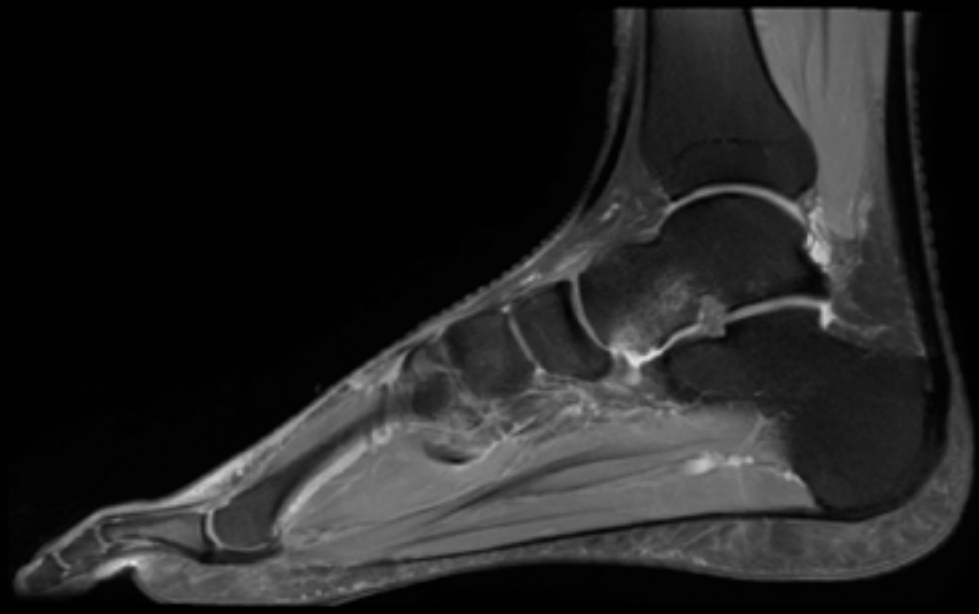


**AV Cartilage Assessment**
Visualize cartilage structures

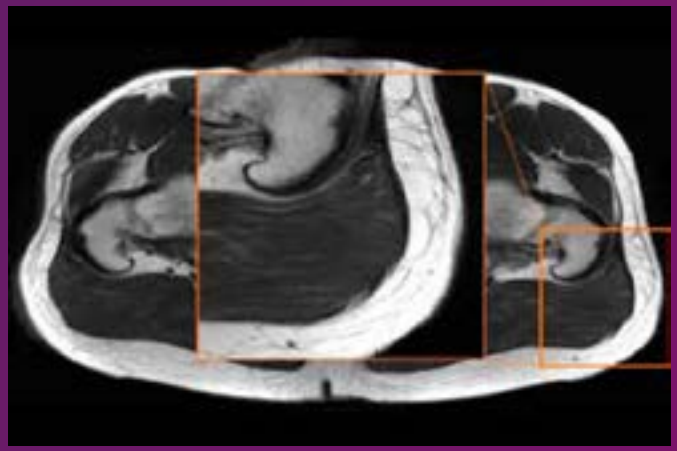
# Index clinical applications

## 2k Imaging

# High resolution imaging

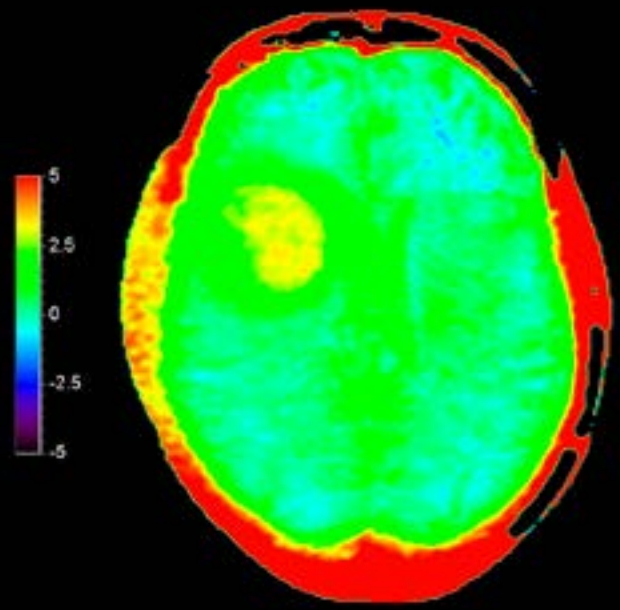


2k Imaging offers a scan matrix of 2048 x 2048, providing high resolution even with large FOVs, or lower resolution scans with a 2048 matrix reconstruction. Compatible with all imaging methods.

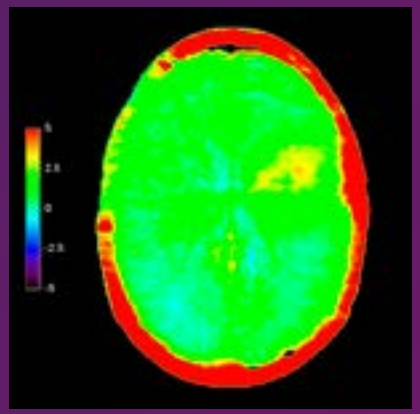


**Ultra high resolution imaging**

# 3D APT
# Enhanced diagnostic confidence in neuro oncology




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**

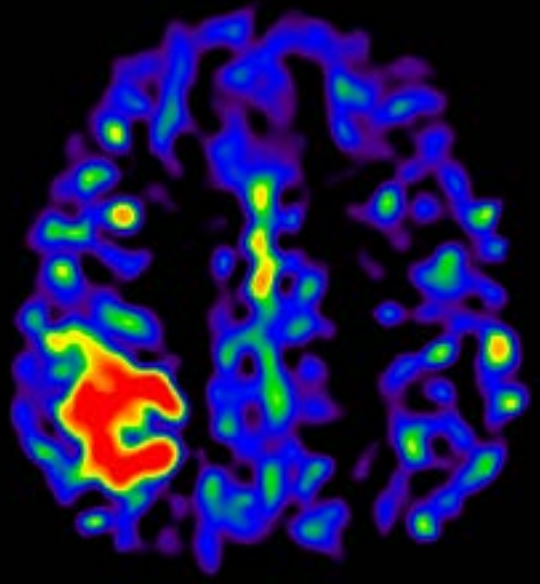
**Additional information:**

- 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

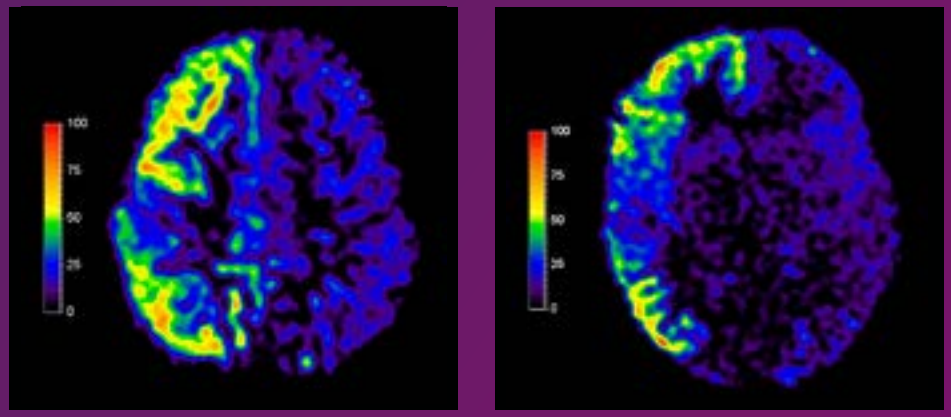
1 Togao et al. (2014) Neuro-Oncology
2 Park KJ et al. (2016) Eur Radiol

# 3D ASL

# Reproducible contrast-free brain perfusion



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

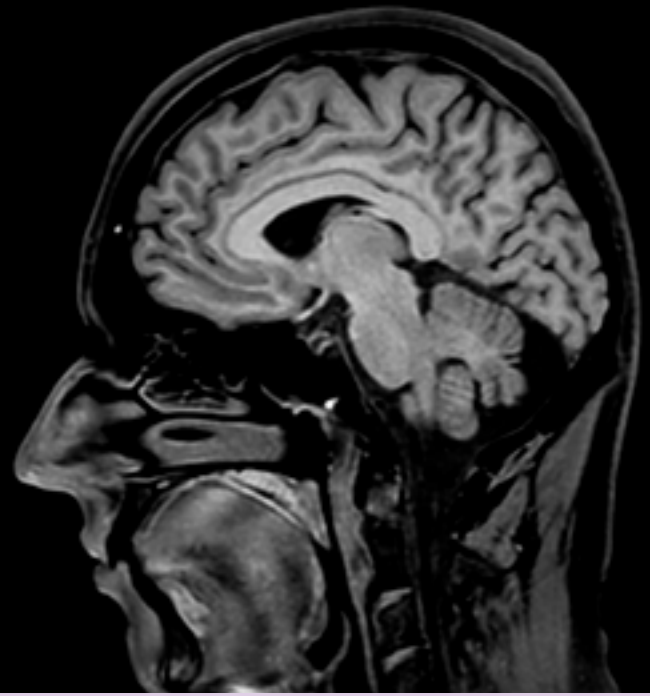



**Quantification of brain perfusion in a non-contrast manner**



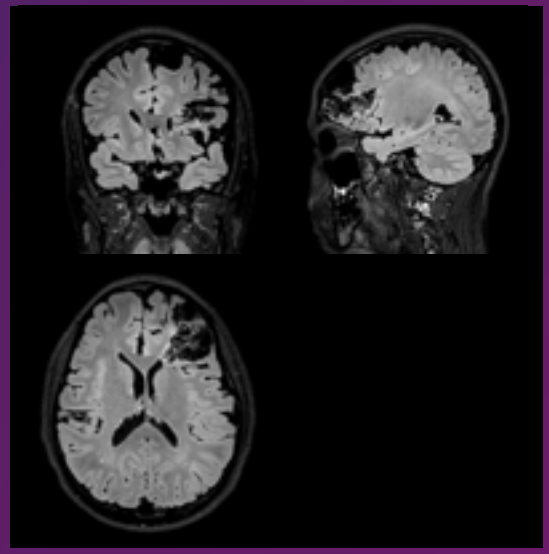
1 Measured on a single Philips 3.0T system for the same volunteer.

# 3D BrainVIEW



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

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

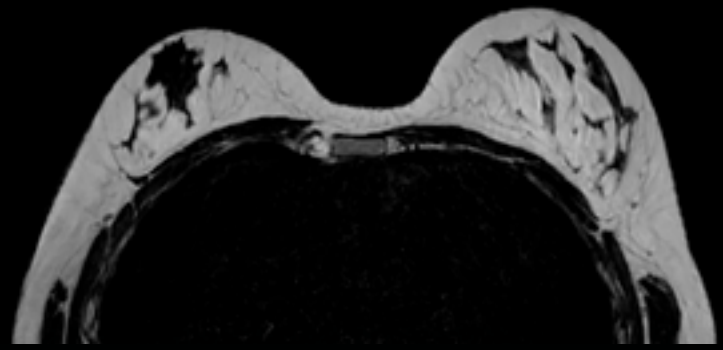


**Additional information:**

- 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.

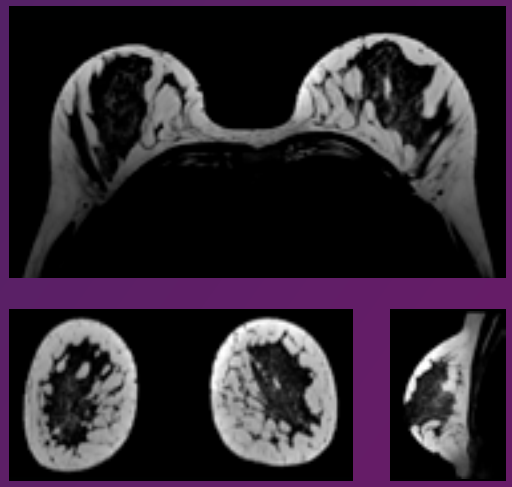
1 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

# 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:**

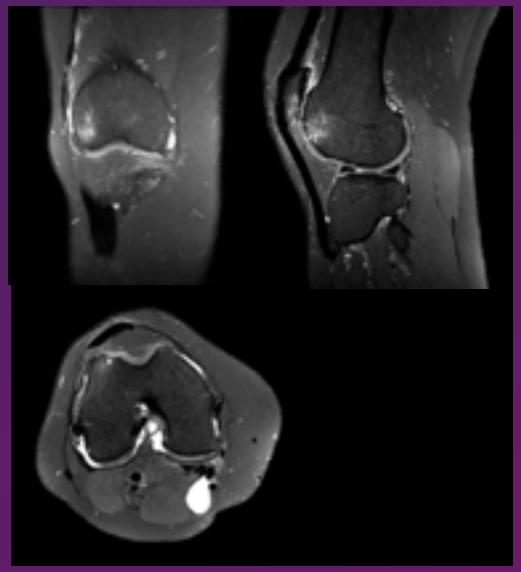
- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times[1].
- Available for a range of contrasts.

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

## 3D MSK VIEW

# View your 3D TSE imaging data in any plane

3D MSK VIEW 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.



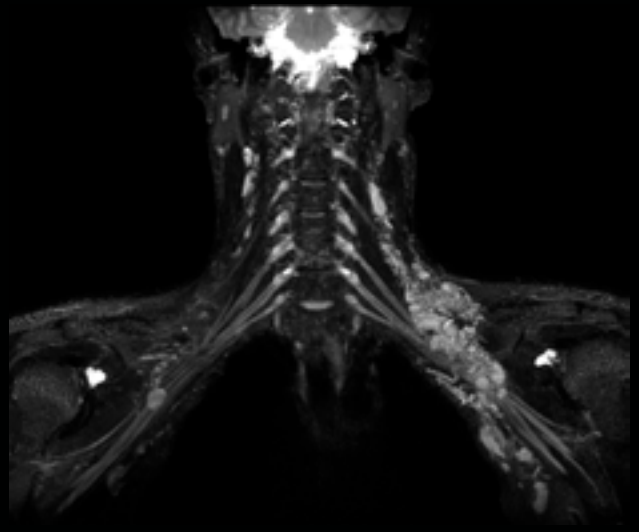
**Additional information:**

- 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.

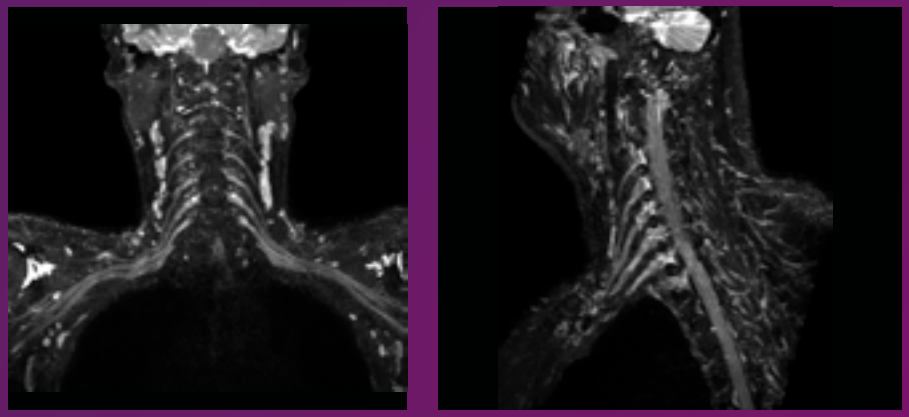
1 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

# 3D NerveVIEW

## Review nerve plexus, non-invasively



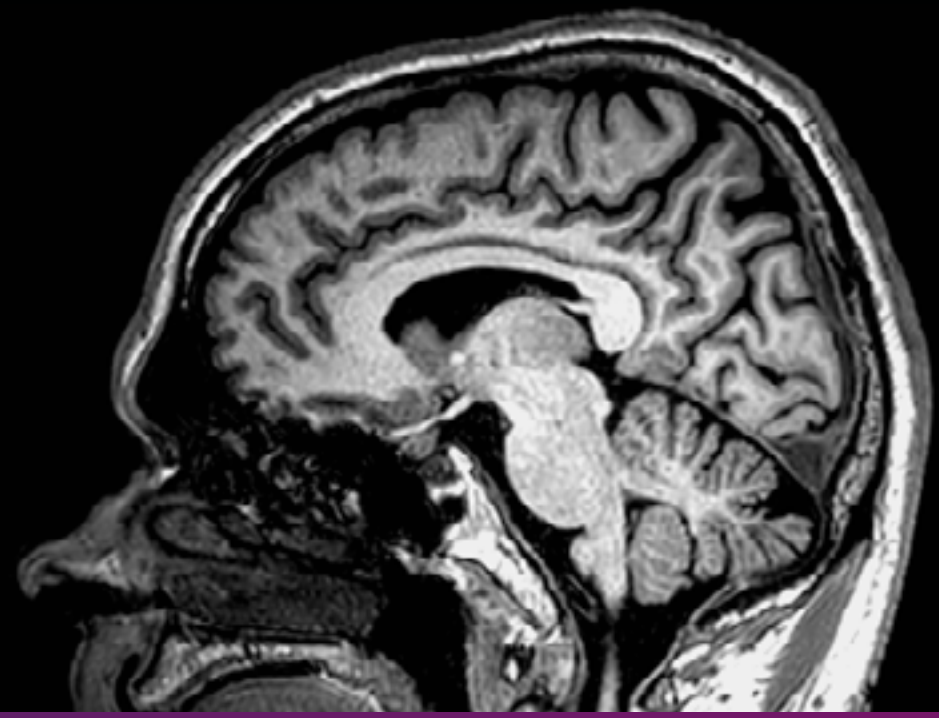
3D NerveVIEW improves visualization of the brachial and lumbar plexus by providing you with a high resolution T2w TSE acquisition with reduced remaining intra-lumen signal of the veins[1]. In addition, the 3D isotropic imaging method allows for reformats in any plane (including oblique) without loss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



**Improved visualization of the spinal nerve plexus**

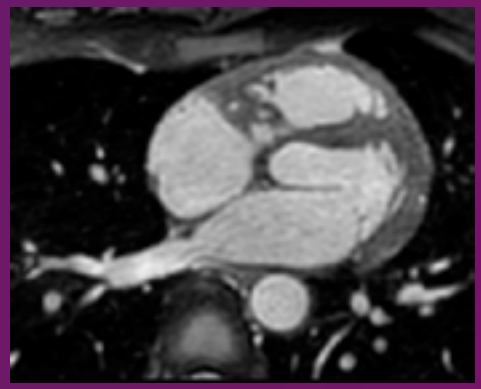


1 By use of MSDE black blood pre-pulse with STIR/SPAIR, compared to our STIR/SPAIR sequence without MSDE pre-pulse.



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

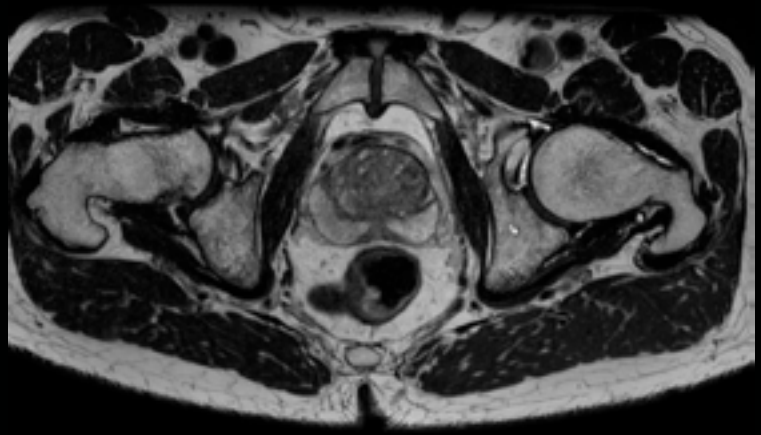
3D Non-selective enables faster and more robust[1] large volume 3D FFE imaging in brain and cardiac applications. Thanks to shorter TR and TE, 3D Non-selective delivers a 9% faster protocol and improved grey-white matter contrast in Brain 3D TFE.[1] For cardiac applications, 3D Non-selective delivers 3D bFFE with reduced banding artifacts.[1]





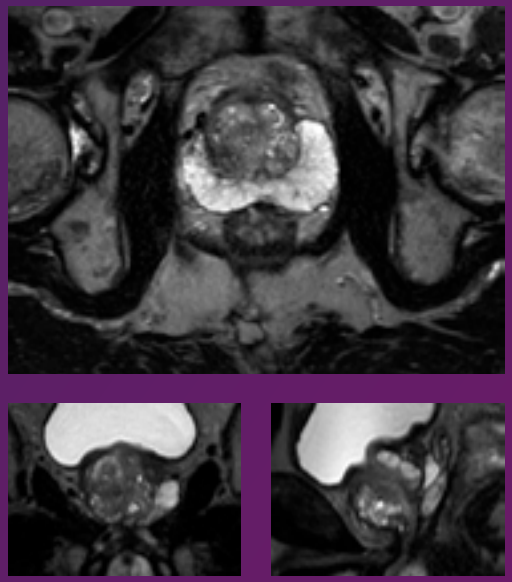
1 Compared to Philips 3D Selective 3D FFE imaging.

# 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**

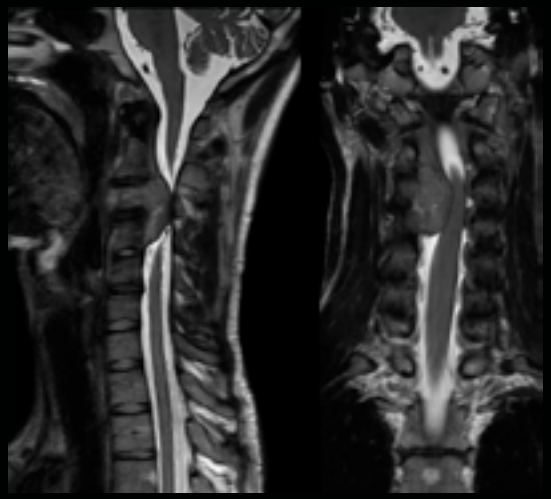
**Additional information:**

- 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.

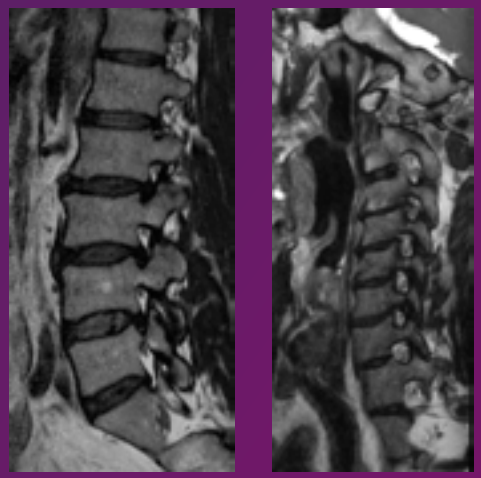
2 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

# 3D 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**

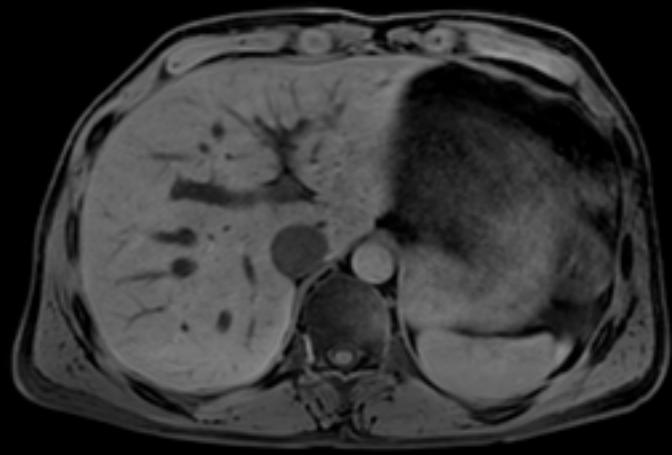
**Additional information:**

- 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.

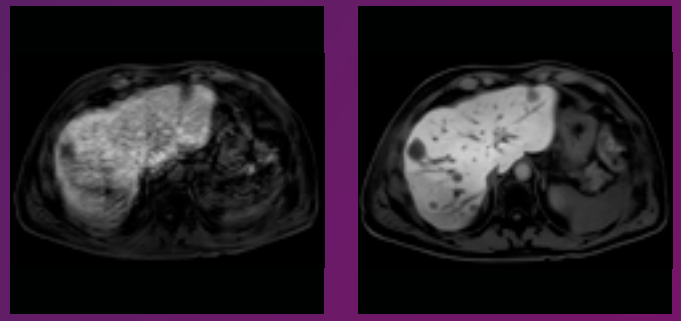
1 Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

# 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)**

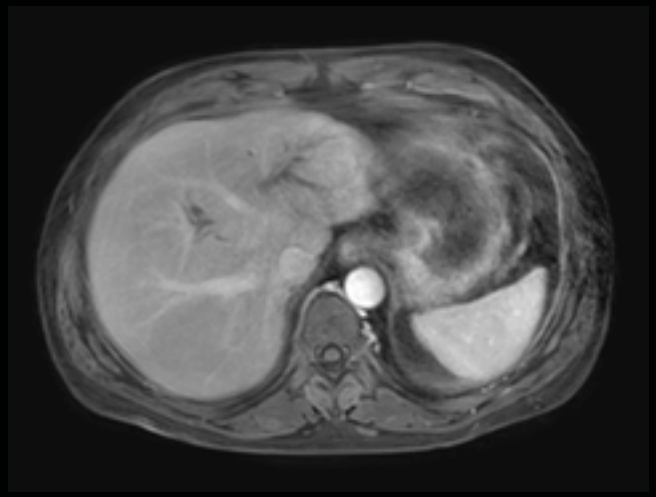
**Additional information:**

- 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.

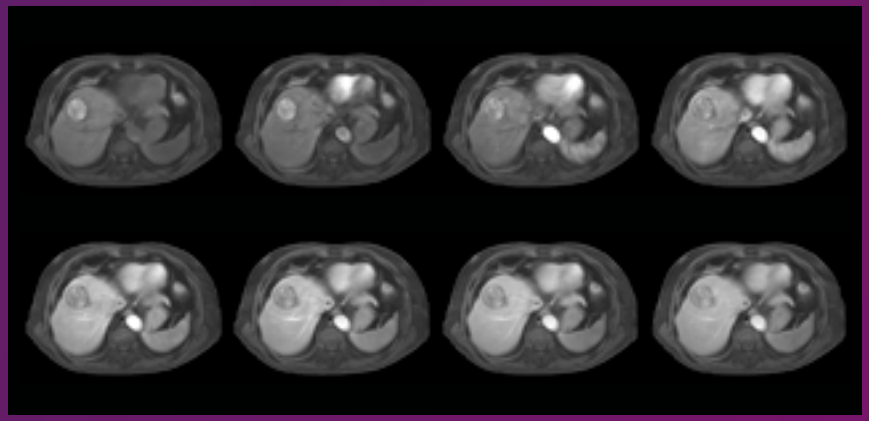
# 4D FreeBreathing

# Multi-phase liver studies without breathholds



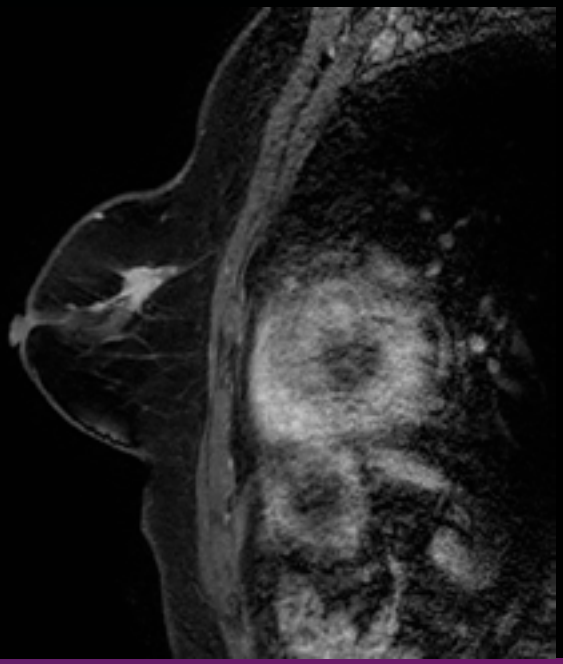
Multi-phase contrast-enhanced MRI studies are used to diagnose liver lesions, but many patients are simply not capable of performing multiple breathholds. With 4D FreeBreathing, you can now offer free-breathing MRI liver to a broader population, while improving imaging confidence and the patient experience. 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**

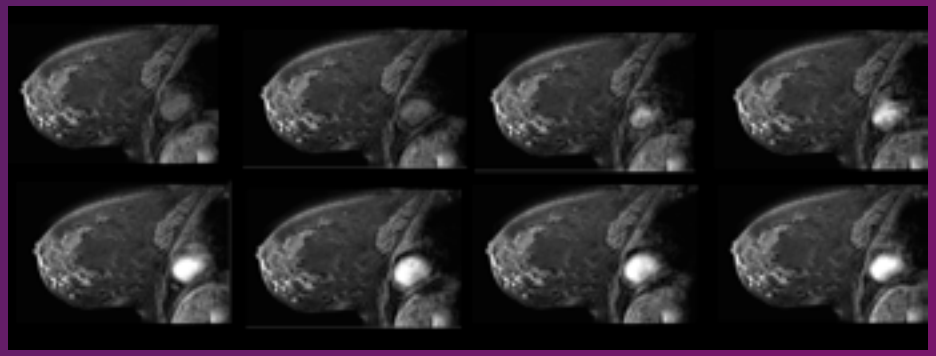
1 Compared to eTHRIVE in subjects unable to hold their breath.
2 Dynamics are reconstructed at prescribed temporal resolution and will contain data shared from earlier and later time points.



# 4D-THRIVE/BLISS

# Accelerate dynamic breast imaging

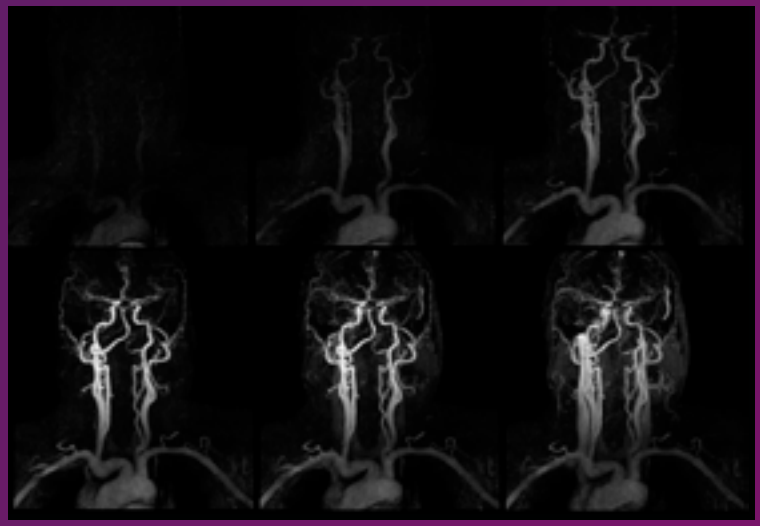
4D-THRIVE/BLISS is a time-resolved 3D technique to drastically accelerate dynamic breast imaging through the combination of a keyhole method with CENTRA and SENSE. Combines high spatial resolution with high temporal resolution to facilitate acquisition of multiple dynamic volumetric data sets per breath-hold.



**Accelerated, high resolution, sagittal 3D breast imaging**

# 4D-TRAK XD
# Flexibility in your MR Angiography studies

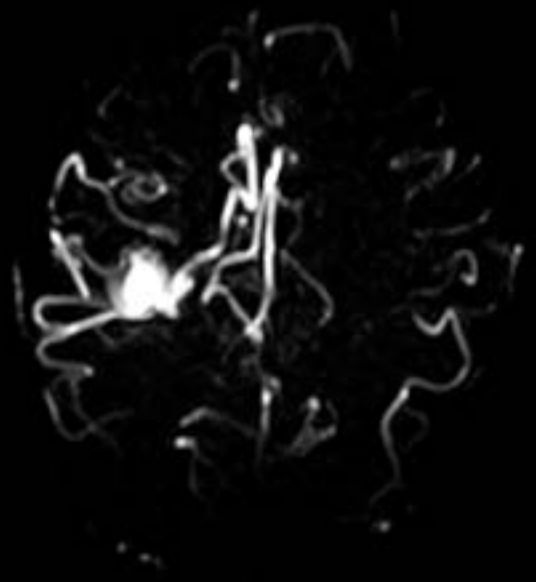
4D-TRAK XD provides a fast, dynamic contrast-enhanced MR Angiography method with flexible sampling of both the arterial- and venous phase, by applying view sharing technique, enabling high spatial and temporal resolution simultaneously.



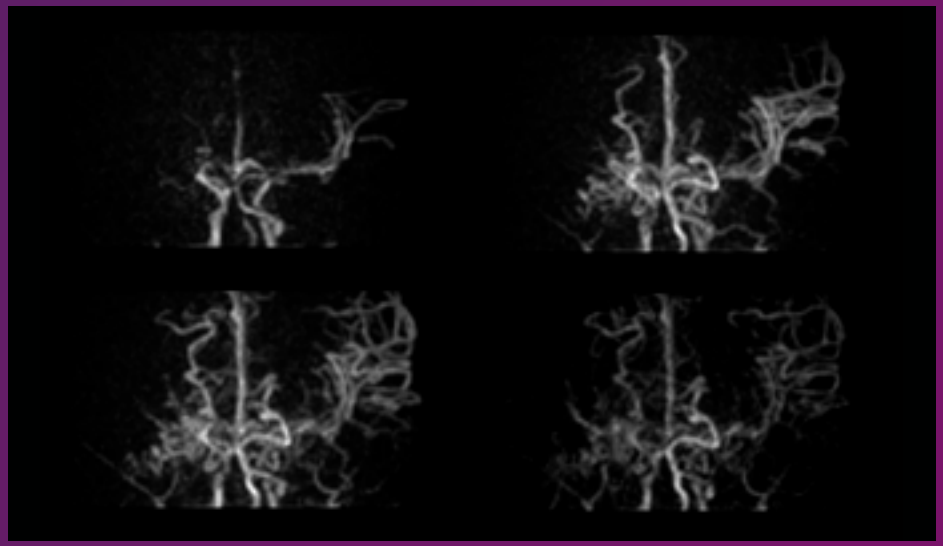
**Fast, dynamic contrast-enhanced MR Angiography**

# 4D-TRANCE

# Contrast-free imaging of brain vascular anatomy



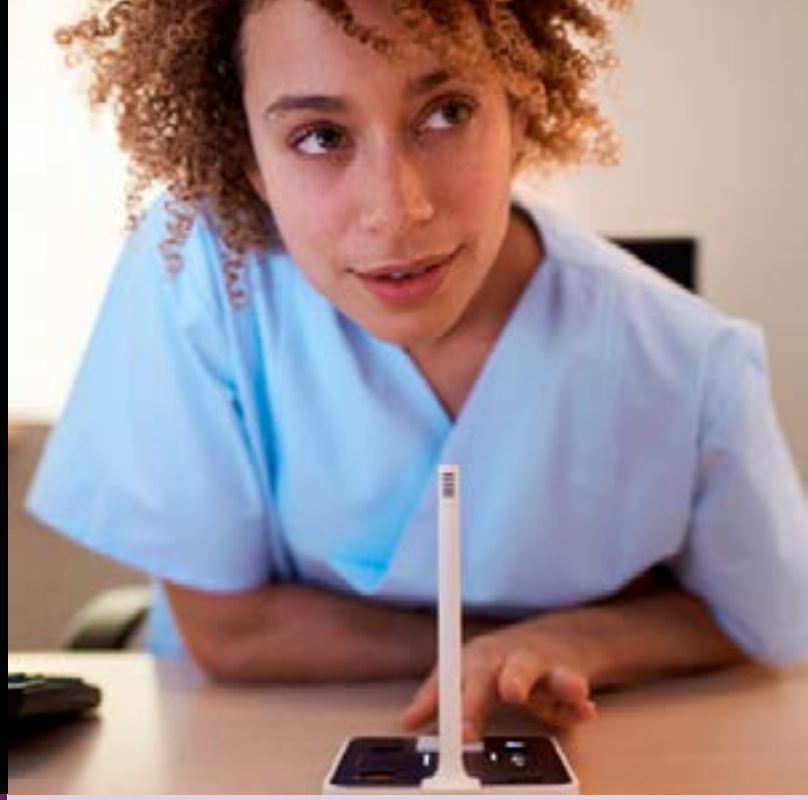
4D-TRANCE is a time-resolved technique for non-contrast angiography, promoting patient comfort and enabling you to evaluate the patency of the vascular anatomy in the brain using endogenous contrast with MIP visualization of multiple phases. 4D-TRANCE enables high temporal resolution down to 160 msec.



**Non-contrast time-resolved angiography of the brain**

# AutoVoice

# Guiding your patients through the examination



AutoVoice is a fully integrated and automated solution that guides your patients through the MR examination by indicating scan duration, announcing table movements and providing breathhold guidance, helping you enhance patient comfort.

Automated breathhold commands are included, based on your preferred setting:

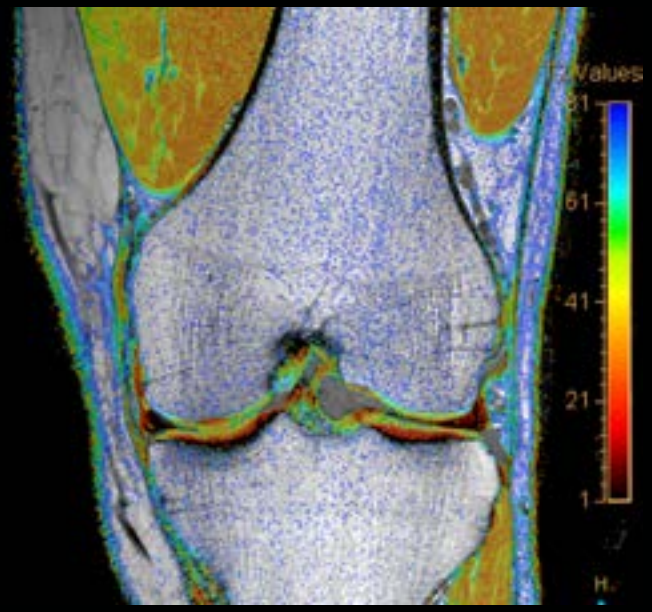
- Pre-recorded breathhold instructions with timing synchronized to fit patient's respiratory cycle.
- Pre-recorded breathhold instructions with manual timing.
- Manual breathhold instructions with manual timing.

**Additional information:**

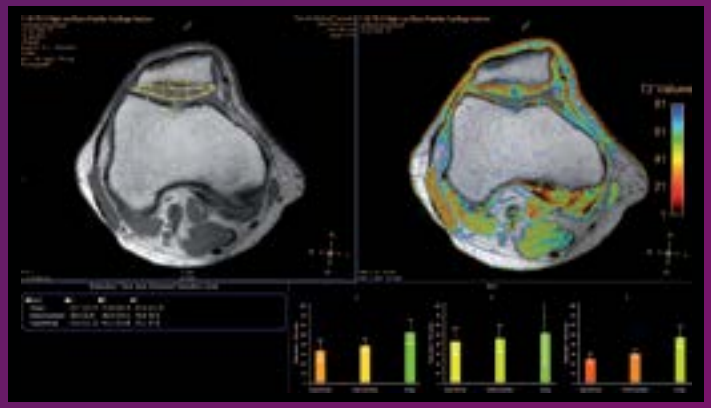
- Announcement:
  - Indication of scan duration.
  - Announcement of table movements.
- Customization
  - Record your own text, with local pronunciation.
  - Record your own voice.
- Export
  - Allows export of customized settings to other Philips MR scanners.

# AV Cartilage Assessment

## Visualize cartilage structures

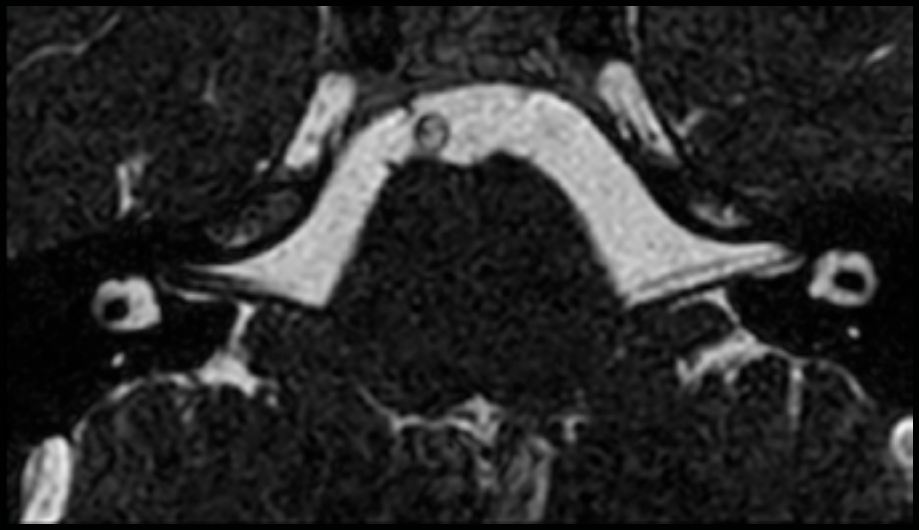



AV Cartilage Assessment enables the advanced visualization of cartilage structures and provides tools to support determination of the degradation of the cartilage. Quantitative analysis of T2 relaxation time displayed via integrated color-coded T2 maps. Positioning of cartilage-shaped, layered region of interest is used to assess variation of T2 values across the cartilage depth to determine the degradation of the cartilage.

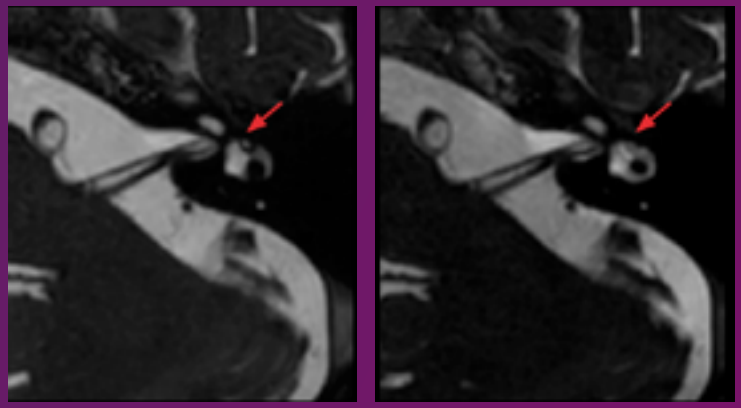


**MR Echo accumulation**

# bFFE XD
# Expanding clinical applications of balanced FFE

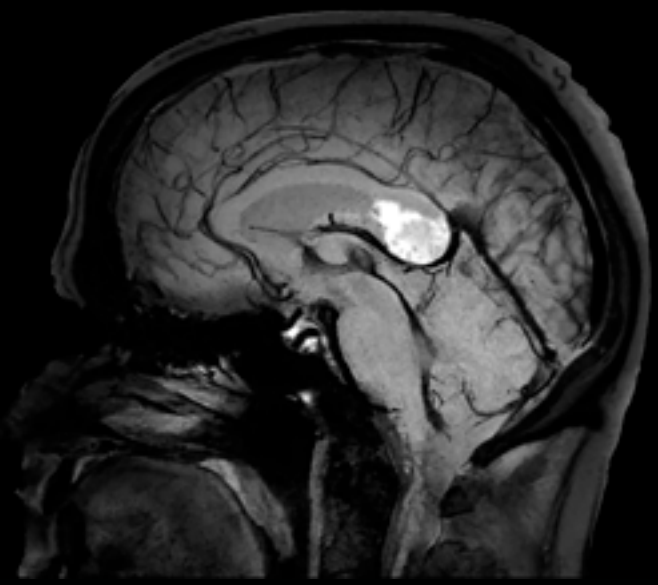


bFFE XD expands the clinical application of bFFE towards better visualization of fine structures. It delivers robust 3D, high resolution imaging with a spatial resolution up to 0.5 x 0.5 x 0.5 mm[1] in less than 6 minutes for inner ear applications, with reduced banding artifacts compared to conventional Philips balanced FFE.



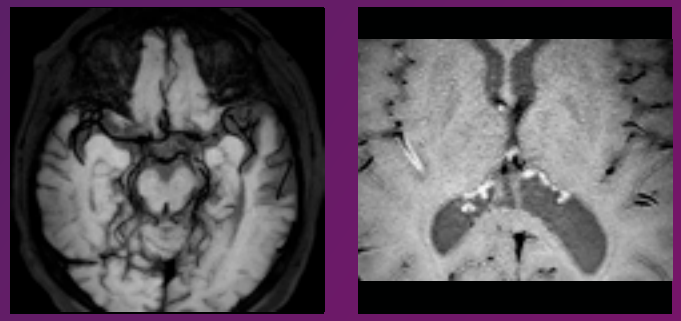


1 For 3.0T systems. For 1.5T systems 0.6x0.6x0.6 mm.



# Black Blood imaging
# Enhance your diagnostic confidence for Brain imaging

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



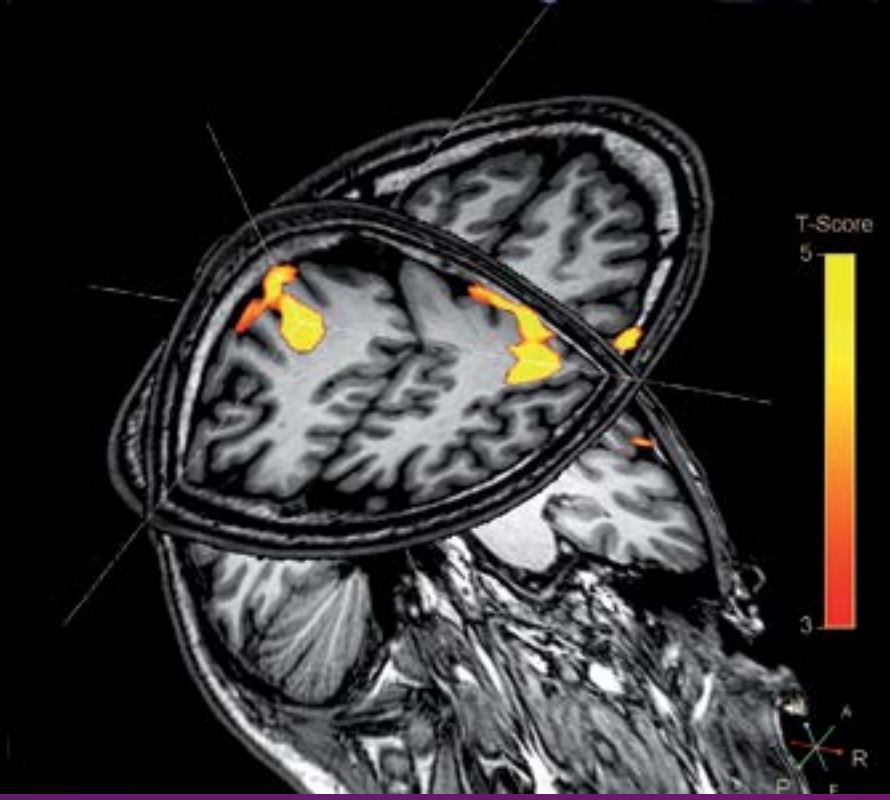
**Reduction of the intra-lumen brain blood signal**

**Additional information:**

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

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

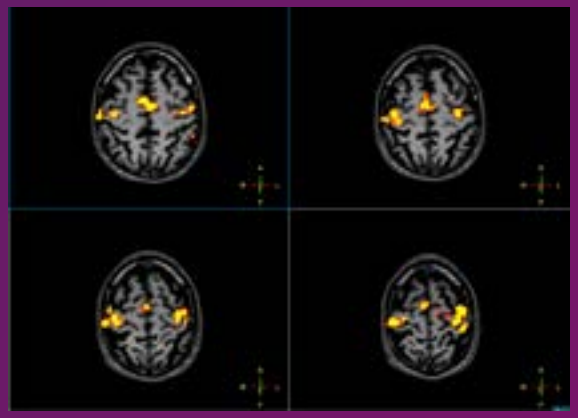
3 Compared to our 2D double inversion recovery methods with same full brain coverage.




# 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.

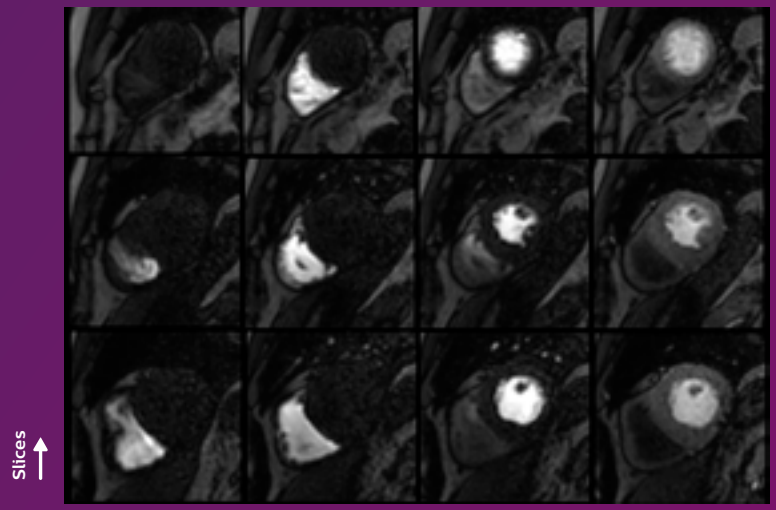


**Visualize task-related areas of activation in the brain**

# Cardiac Expert

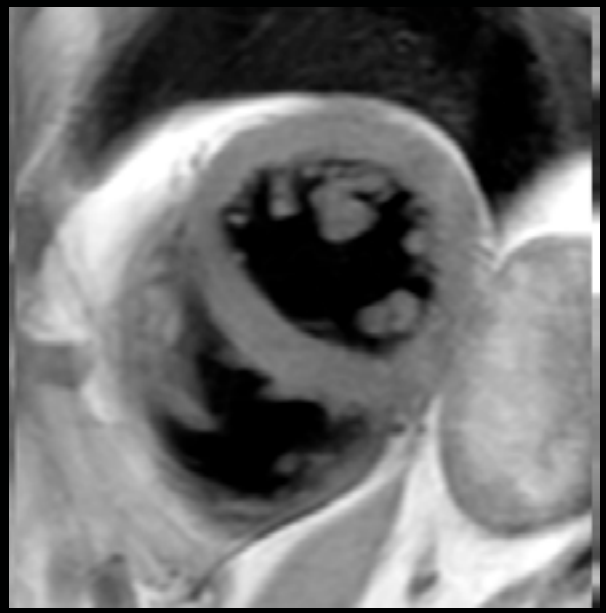
## Expand your cardiac MR functionality

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

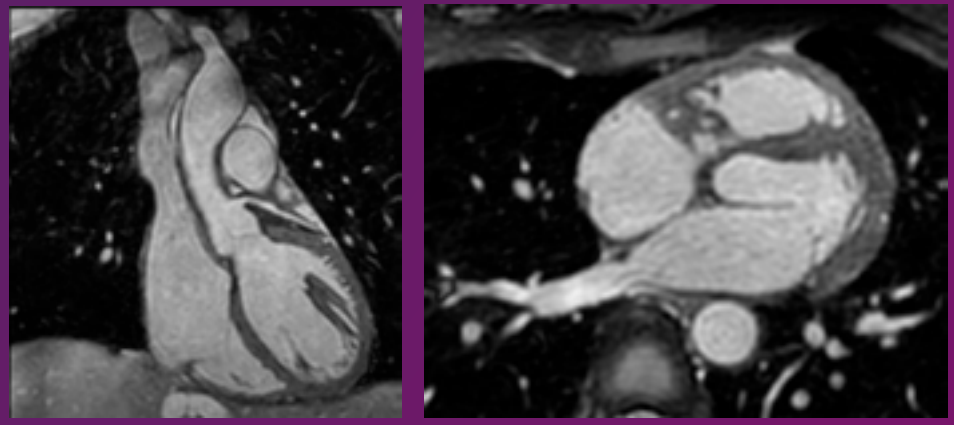



1 With a (B1 insensitive) saturation pre-pulse
2 By means of REST grids

# Cardiac Expert extension
# Fast CMR methods for anatomy, function and more



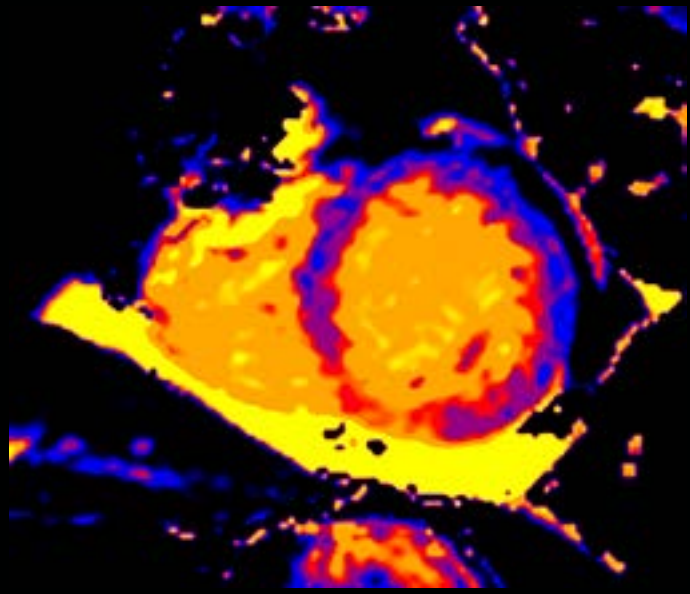
Cardiac Expert extension is an add-on to the comprehensive Cardiac Expert option. It provides additional techniques for fast black blood imaging, functional imaging and dynamic cardiac MR studies. Cardiac Zoom is a small FOV imaging technique that accelerates black blood TSE of the heart and great vessels. 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].



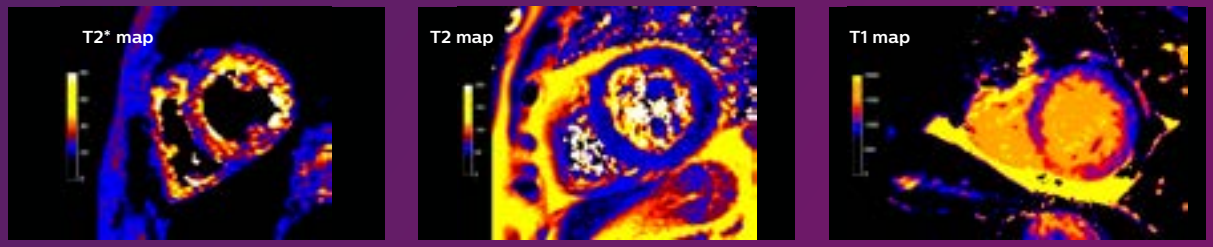
**3D Non-selective bFFE in cardiac applications**

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

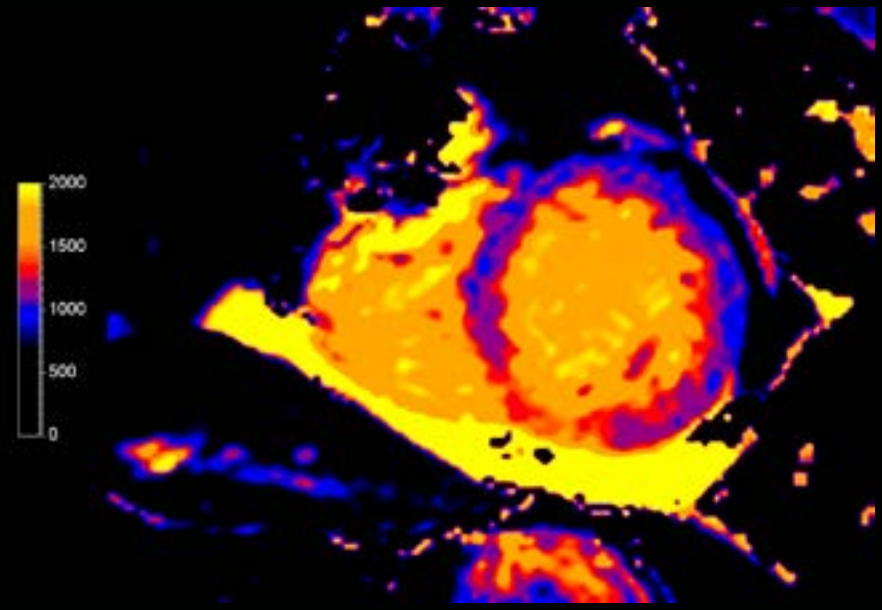
# CardiacQuant
# Non-invasive assessment of myocardial tissue



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.

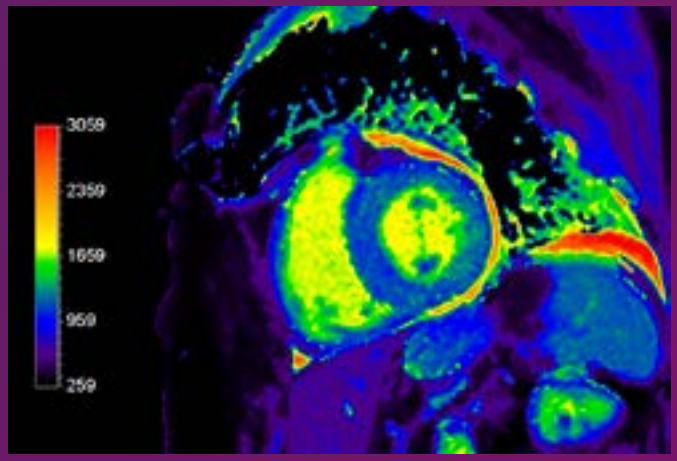



**Quantitative T2*, T2 and T1 maps in a single breathhold scan**




# CardiacQuant Extension
# Flexibility in creation of T1 maps

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.

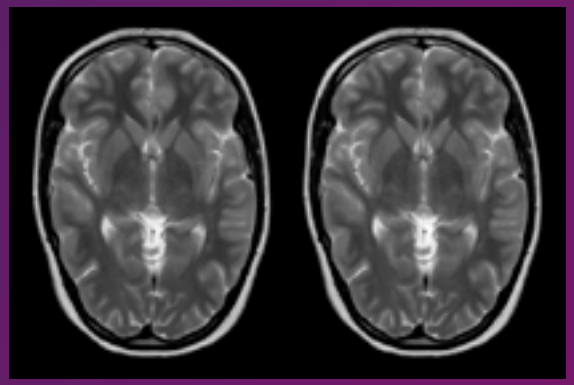



**T1 map**

# ComforTone

# Reduce acoustic noise and enhance patient experience

Leveraging our years of experience in acoustic noise reduction technologies, our unique ComforTone solution achieves up to 80% acoustic noise reduction[1] with similar image quality and contrast within the same time slot.



**T2w TSE**

**T2w TSE - ComforTone 80% reduction in acoustic noise**

**Additional information:**

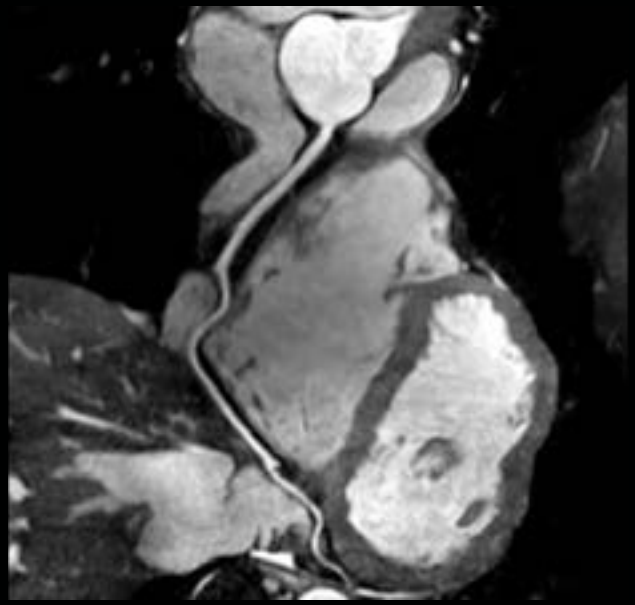
- Can be used in routine exams, like brain, spine and MSK.
- Can be applied with high gradient settings.
- Easy to implement, thanks to ready-to-use ExamCards.



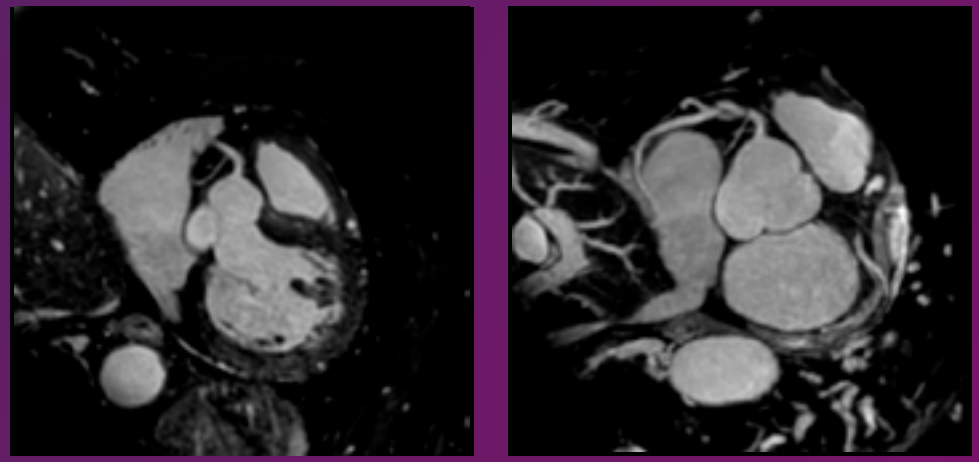
1 Compared to scanning without ComforTone

# Coronary Acquisition

## Perform non-invasive imaging of coronary arteries

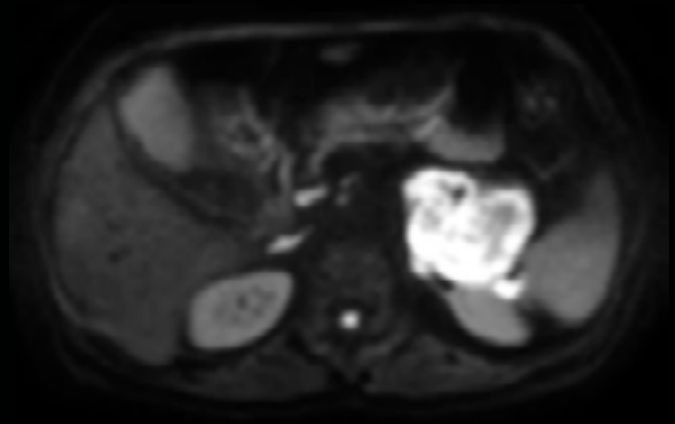


Coronary Acquisition allows for non-invasive imaging of coronary arteries by displaying good contrast between myocardium and vessels by deploying 3D sequences combined with MotionTrak respiratory navigators for real-time motion correction and T2-preparation.



**Non-invasive imaging of coronary arteries**

# Diffusion Excellence Pack



## Step up your diffusion performance

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.

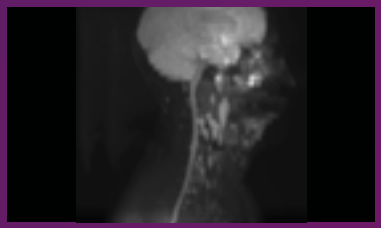
**SmartShim**, delivering reliable fat suppression with simplified workflow due to automating the planning of the shim region and image-based shimming.

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

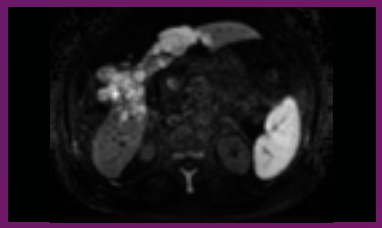
**LOVA ADC**, delivering consistent ADC values with up to 95% accuracy[2] in large field of views.

**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.

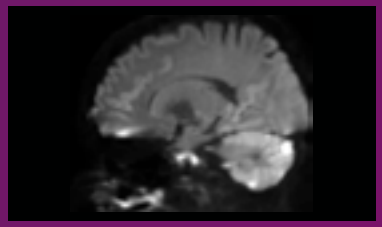


**Reliable fat suppression**



**Synthetic b-value images**

**Consistent ADC values**

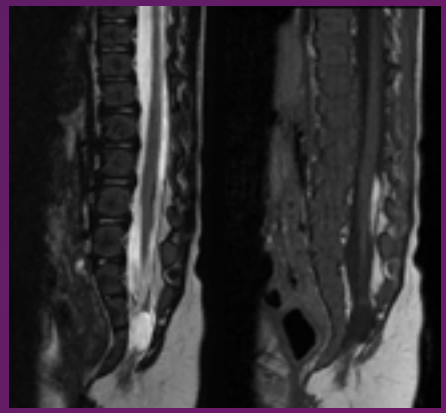


**Improved geometrical match**

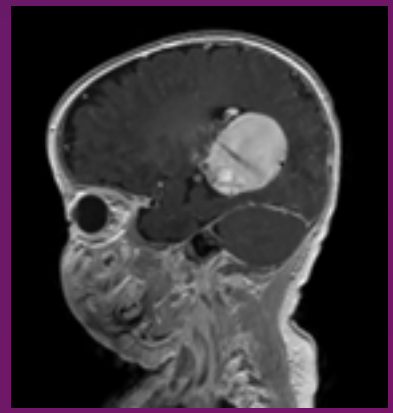
# dS Ped NeuroSpine coil

# 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

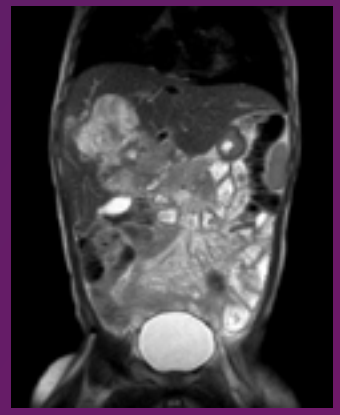


3D T1w Brain imaging

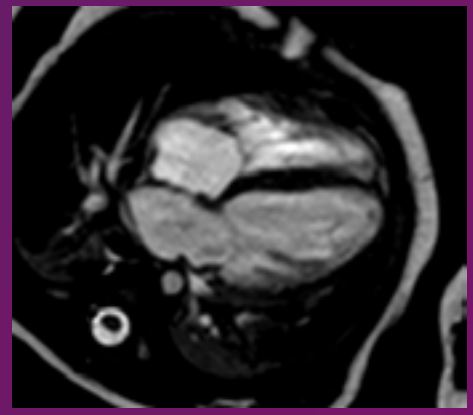
# dS Ped Torso coil

## 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.

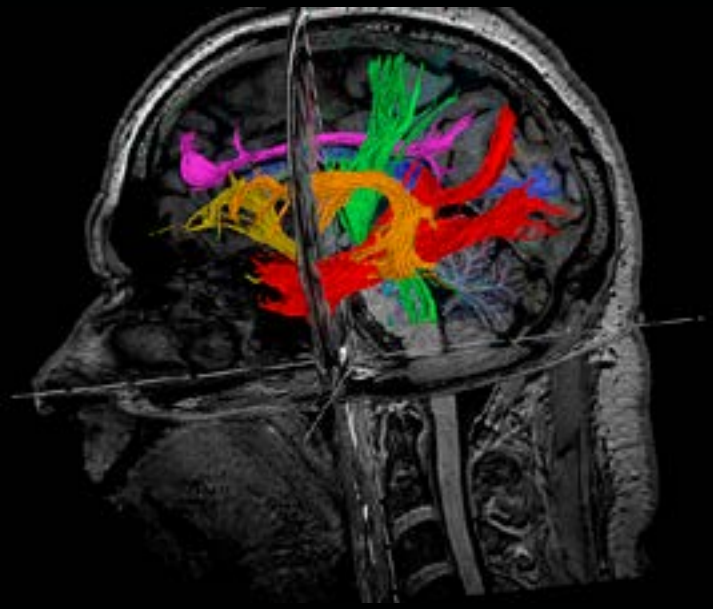


**T2w abdominal imaging**



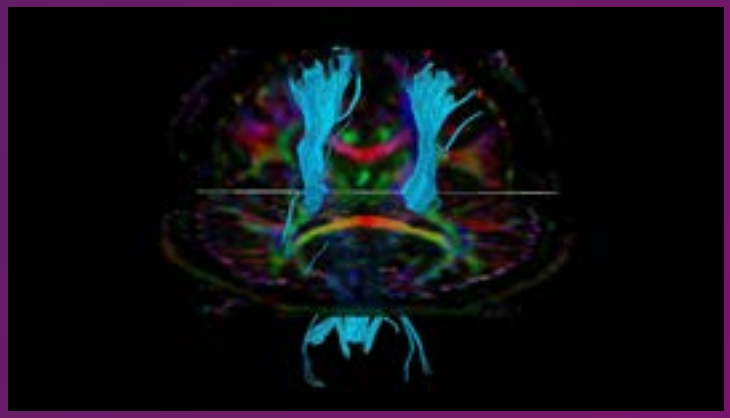
**Cardiac cine imaging**

# DTI FiberTrak

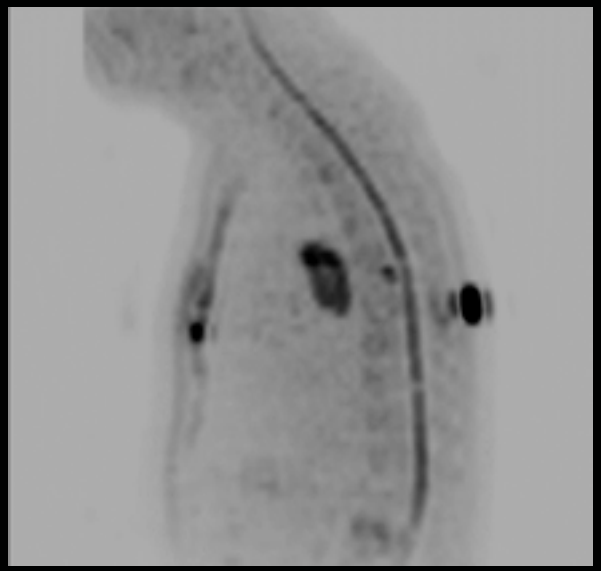


## Fast, easy clinical fiber tracking

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.



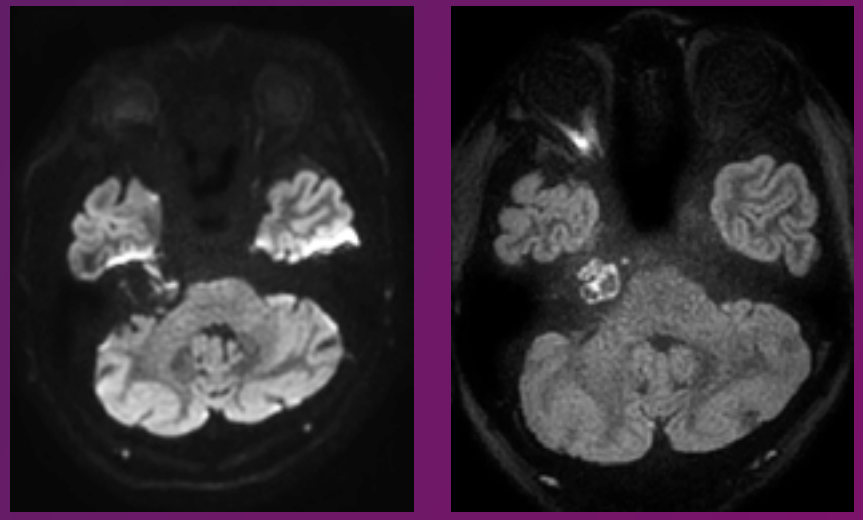
**Visualization of white matter fiber tracts in the brain**



# DWI XD TSE

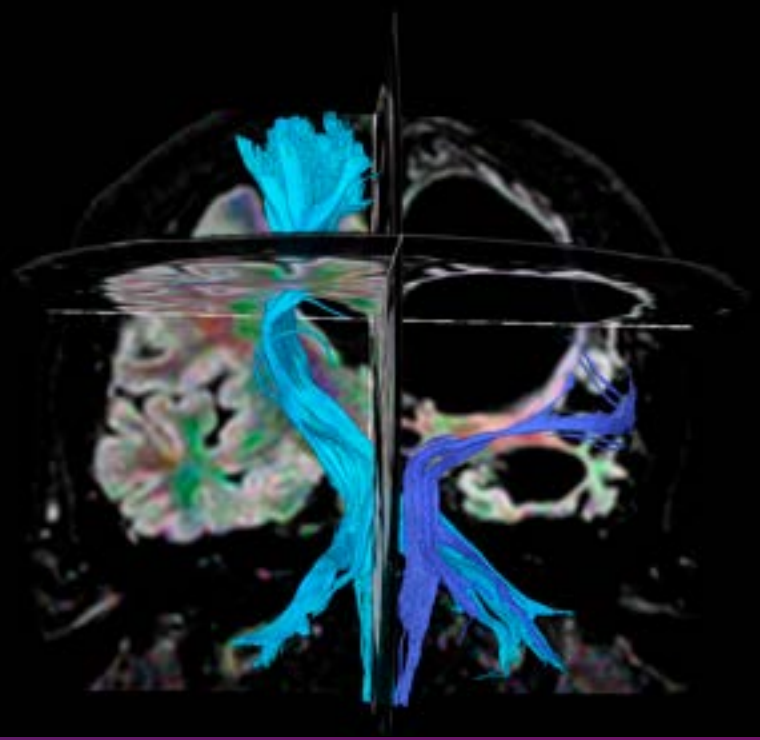
## Speed up and improve the quality of your diffusion TSE

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.



**DWI EPI (left) versus robust inner ear DWI XD TSE (right)**

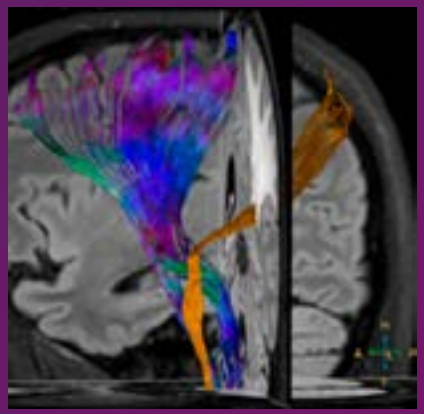
1 Compared to Philips DWI TSE (Single-shot)
2 Compared to Philips multi shot DWI TSE



# FiberTrak Extension

## High definition fibertracking in the brain or spine

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**

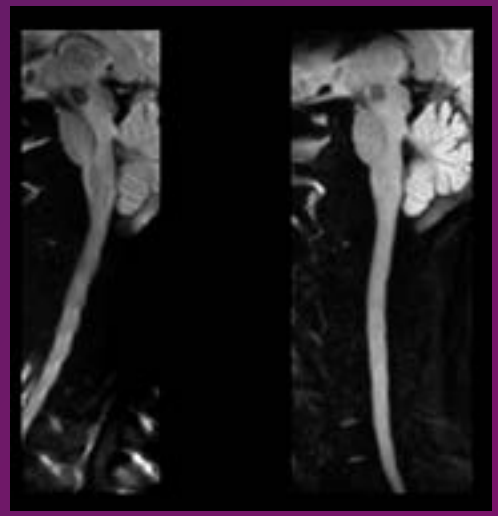


1 Compared to Philips 3D Selective 3D FFE imaging

## IRIS Zoom

# Improved small FOV spine diffusion imaging

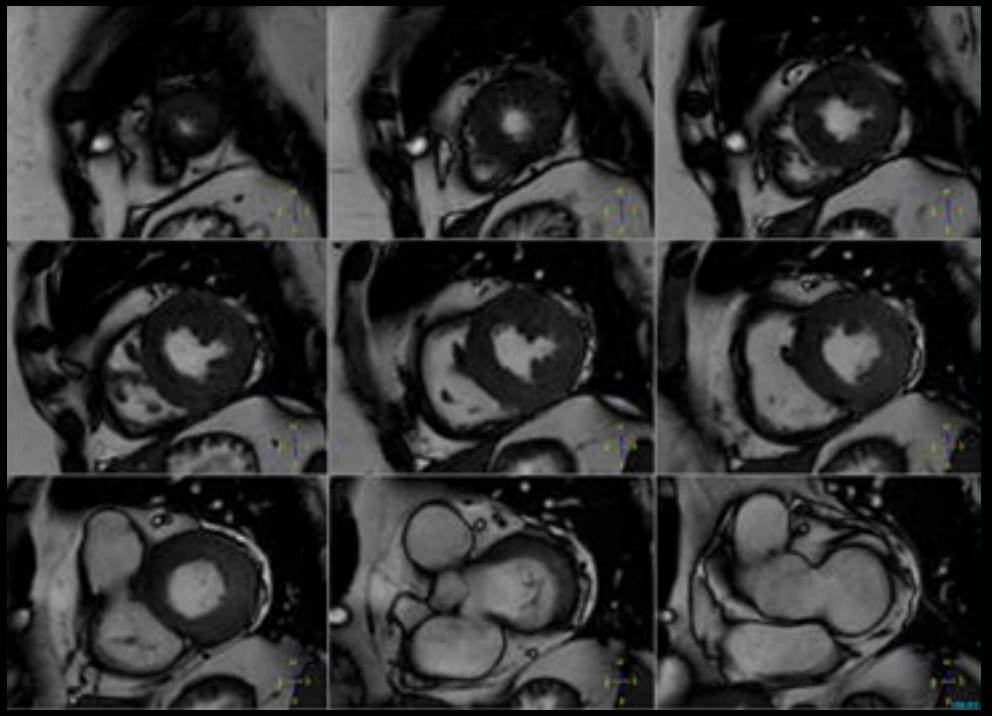
IRIS Zoom delivers small FOV diffusion imaging with higher resolution, lower distortion and improved fat suppression than Philips Zoom DWI. Higher resolution diffusion imaging in the spine is achieved by employing 2D navigator-based motion correction integrated into the dS-SENSE framework. IRIS Zoom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



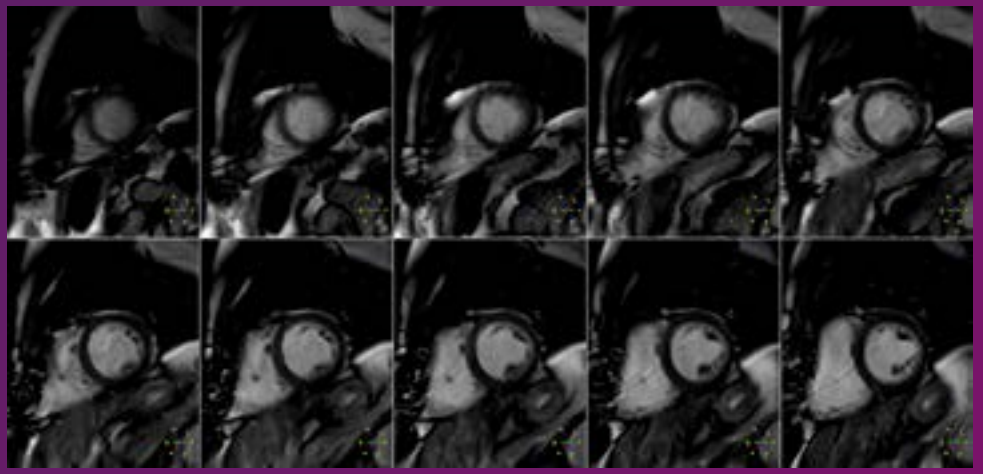
**b800 Zoom DWI (left) versus IRIS Zoom DWI (right)**

# k-t BLAST

# Accelerate your cardiac studies



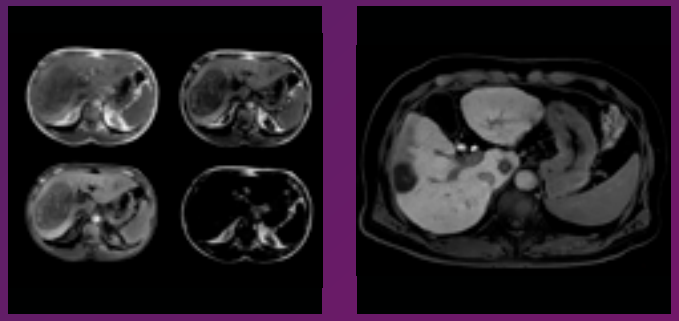
K-t BLAST provides up to five fold acceleration using an alternative parallel imaging technique employing undersampling in time and space. Suited for dynamic and real-time cardiac studies as well as single breath hold, multi-slice cine studies. Can be combined with most other imaging methods.



# 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.

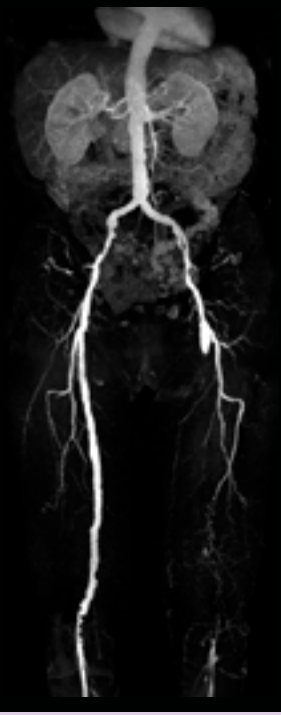


**Multiple image contrasts in one single scan**

**Additional information:**

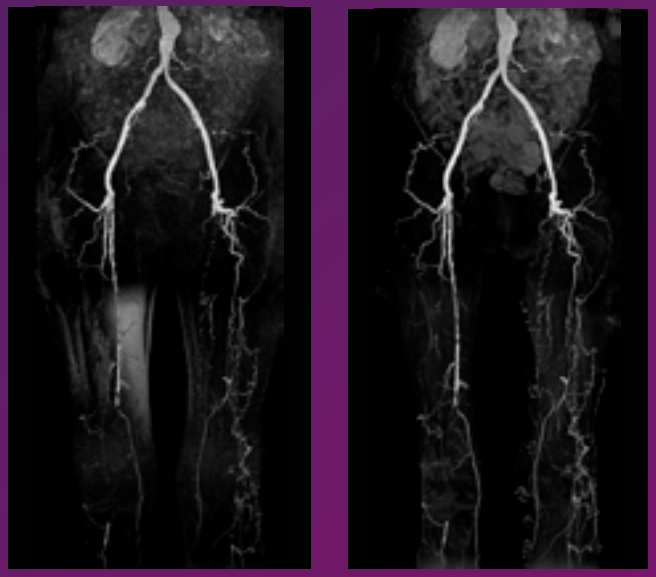
- Improved fat-free imaging over large 400-500 mm FOV and for sub-millimetric resolution[1].
- More efficient, faster scanning[2].
- Increased signal-to-noise ratio[2].
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only)

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.



# mDIXON XD MultiStation
# Non-subtraction peripheral MR Angiography

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



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

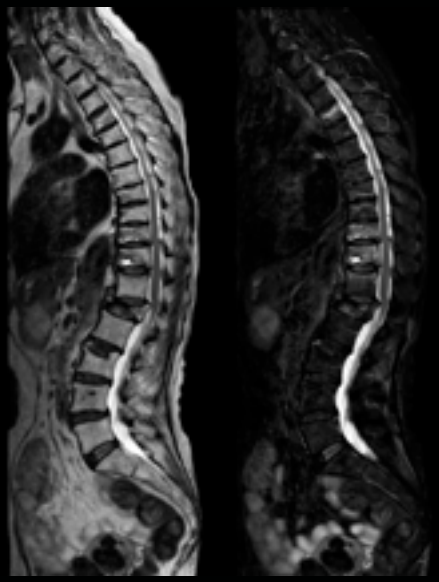
**Additional information:**

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

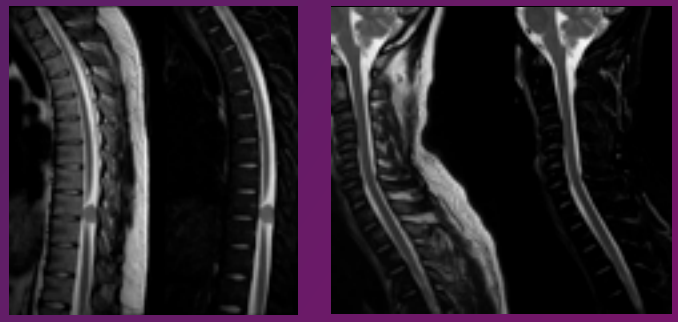
1 As opposed to standard MRA technology relying on the subtraction of a pre and post contrast scan.

# mDIXON XD TSE

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



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



**With/without fat suppression contrasts, simultaneously**

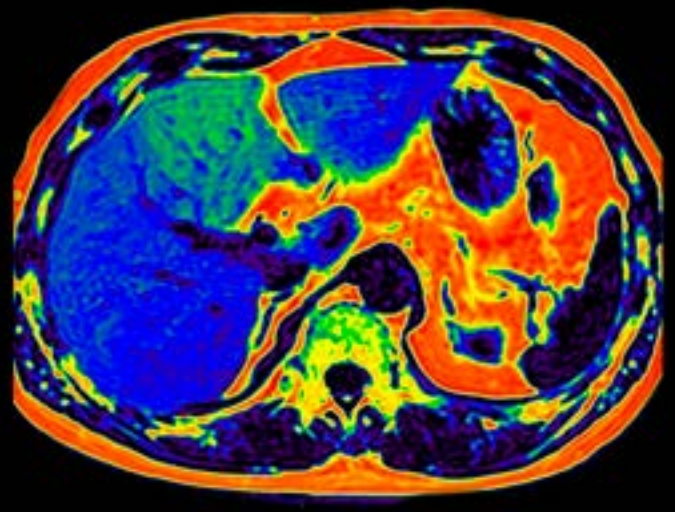
**Additional information:**

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

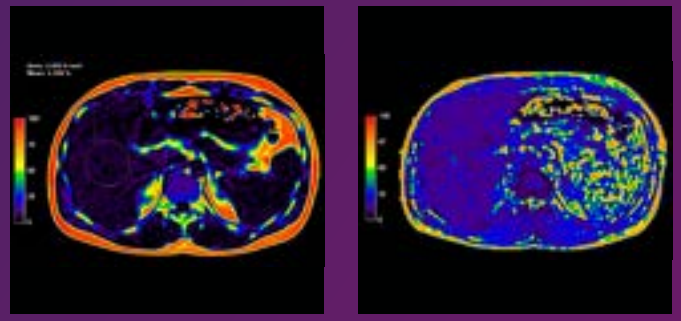
1 Due to its unique 2-echo technology, compared to the conventional 3-echo DIXON TSE techniques.
2 Compared to a standard non-fat-shift corrected fat-free TSE approach.

# 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.



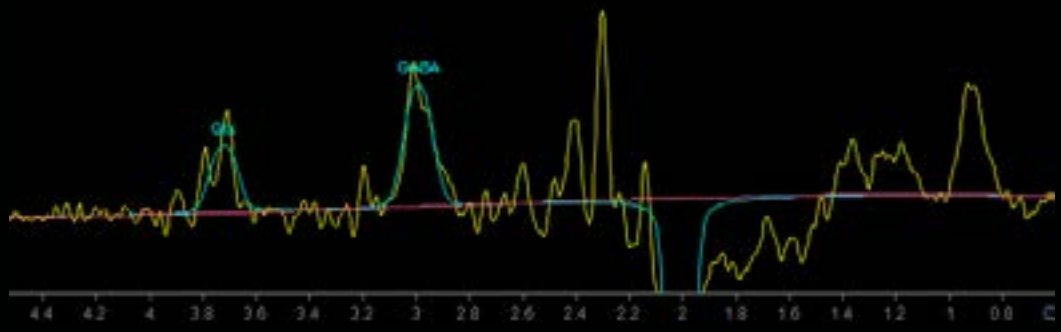
**Fat fraction maps (left) and T2*/R2* relaxation maps (right)**

**Additional information:**

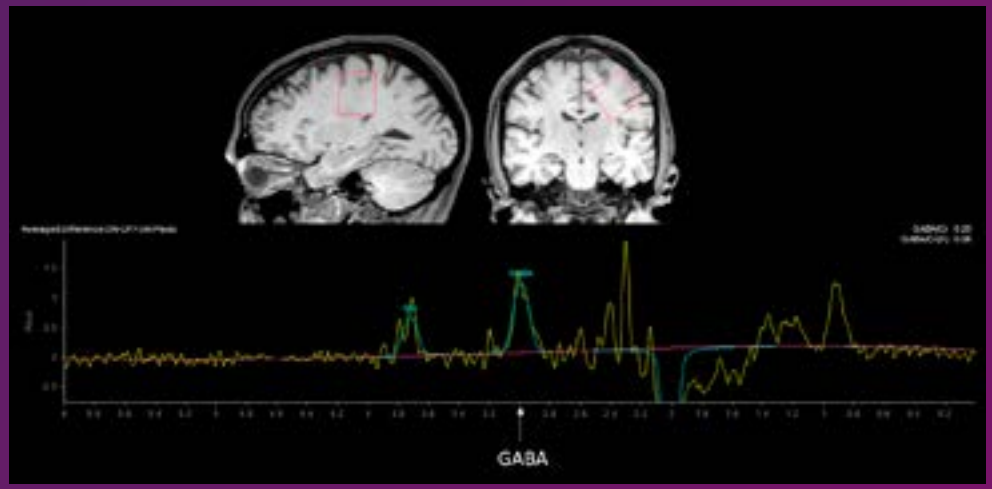
- Single breathhold acquisition.
- Based on state of the art 6-echo acquisition, 7-peak fat modeling reconstruction, correction for T2* confounding effect and low flip angle to minimize T1 bias.
- Fat fraction maps are displayed in colors with a quantification bar.

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

# MEGA
# Detection of additional metabolites



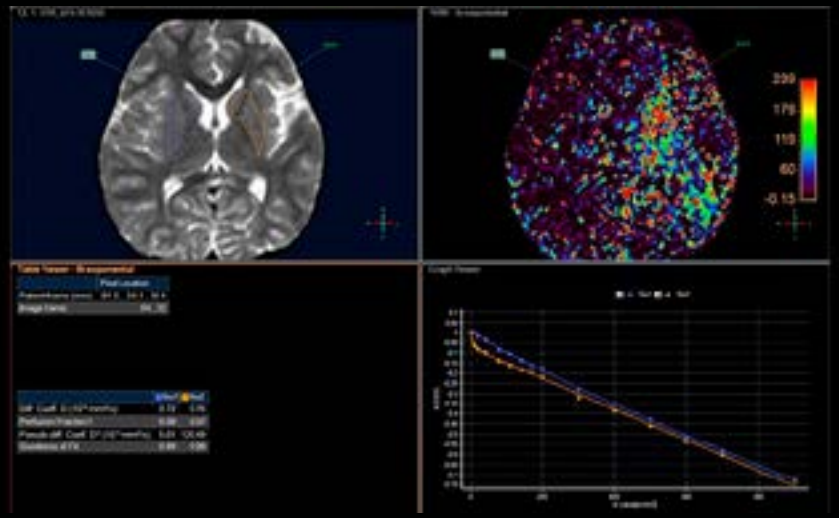

MEGA improves spectroscopy by revealing spectral peaks of interest which would otherwise remain hidden. It also allows detection and relative quantification of J-coupled metabolites such as gamma-aminobutyric acid (GABA) by automatically removing the spectral overlap from other metabolites. (In conventional 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.



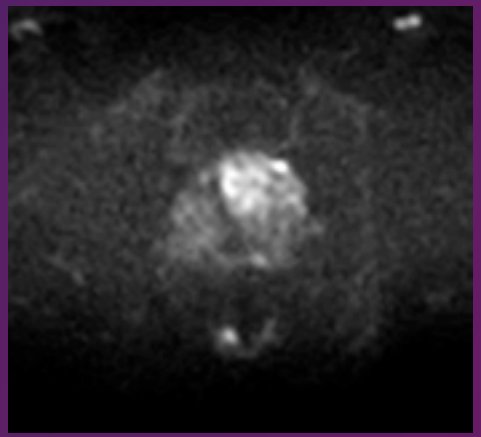

**Detection of GABA with single voxel MEGA MR Spectroscopy**

# MR Advanced Diffusion Analysis

## Calculate diffusion maps at a b-value of choice



Advanced Diffusion Analyses (ADA) is intended to view, process and analyze MRI diffusion weighted images. It calculates and displays cDWI at a b-value of choice (from 0 to 5,000 s/mm2). The package also supports advanced MR parametric analysis and visualization tools, generating maps of diffusion kurtosis and intravoxel incoherent motion (IVIM) diffusion.



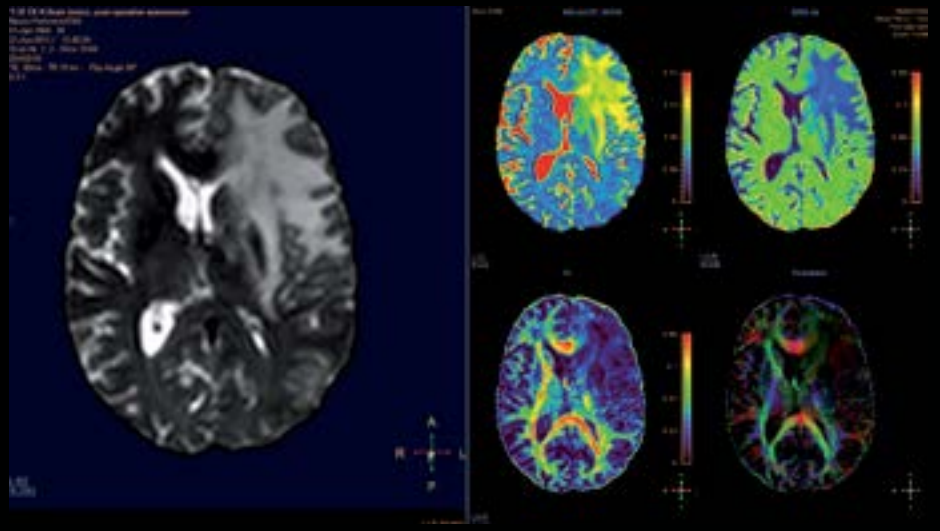
**Calculate and generate diffusion maps**

**Additional information:**

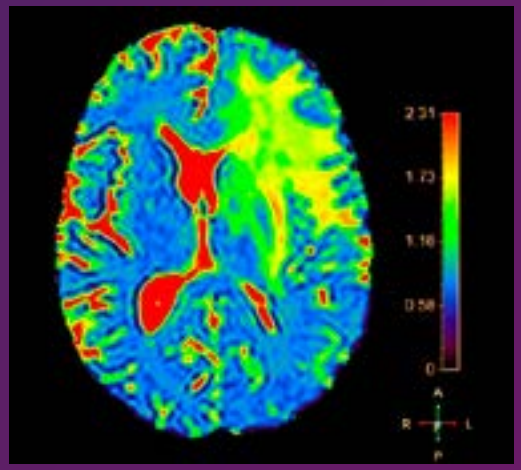
- Presents a default diffusion analysis model based on the available original DWI images as well as a selection of alternative models including mono-exponential, bi-exponential, simplified IVIM, and kurtosis.
- A ‘goodness of fit’ value and fitted curve show the fitting quality of the selected model.
- Provides parametric maps of perfusion fraction (f), pseudo diffusivity (D*), Diffusivity (D) and Kurtosis (K).

# MR Diffusion

## Analyze diffusion and anisotropic properties of tissue



MR Diffusion is designed to analyze diffusion and anisotropic properties of tissue. The application evaluates Diffusion Weighted Imaging (DWI) series to generate parametric maps such as ADC and eADC. For Diffusion Tensor Imaging data, additional parametric maps are generated, including fractional anisotropy, axial diffusivity or radial diffusivity. MR Diffusion can help to characterize diffusion properties of tissue in such cases as tumor assessment or stroke.

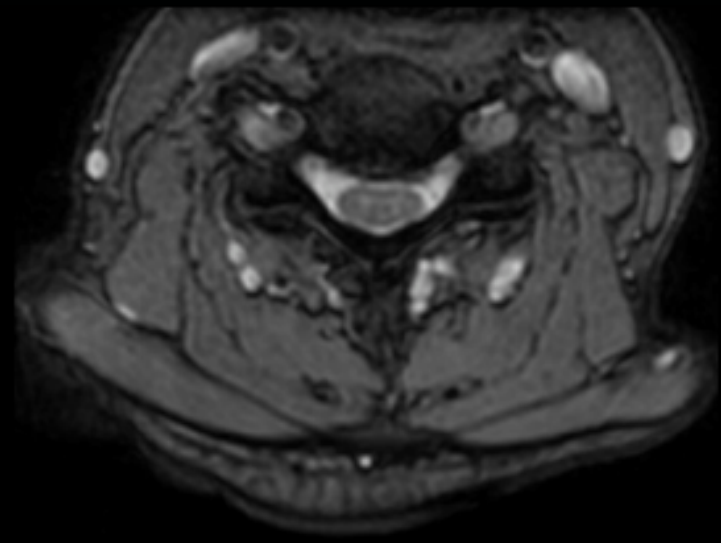


**Additional information:**

- The user can make a sub-selection of the acquired b-values for analysis and select preferred color-coding for the parametric maps.

# MR Echo Accumulation

## Calculation of new images based on series with multiple echoes

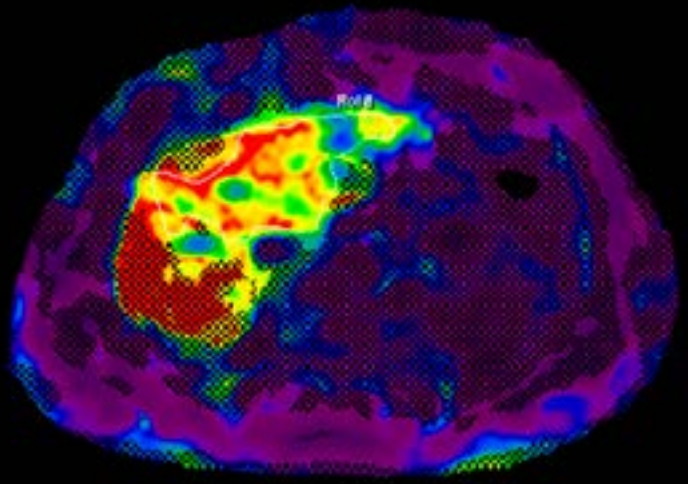


MR Echo Accumulation is used to perform pixelwise echo accumulations for imaging series with multiple echoes. MR Echo Accumulation enables the calculation of new images based on the selected sum of echo times of series with multiple echoes. The processing provides interactive update of the results.

**Additional information:**

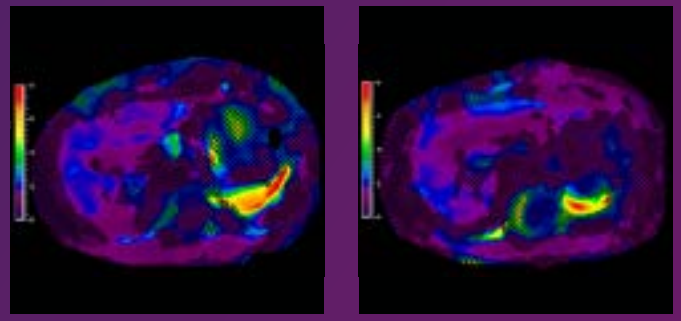
- MR Echo Accumulation enables the calculation of new images based on the selected sum of echo times.
- Provides the ability to define the accumulation range using an interactive slider.
- Enables preview, save and analysis on the calculated new series.

# 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.

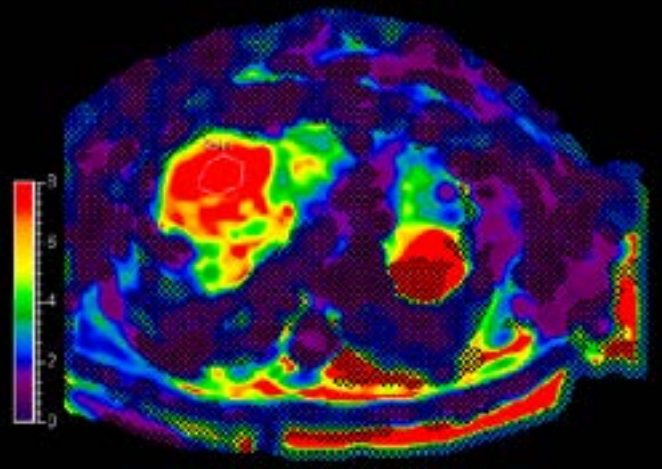


**Elastograms reflecting tissue stiffness in kPa**

**Additional information:**

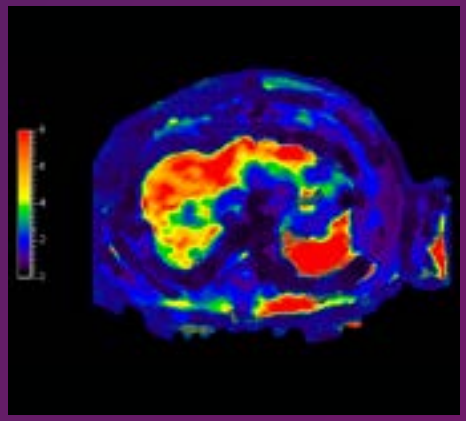
- Image processing is fully integrated at the scanner.
- Automated calculation of Elastograms, reflecting tissue stiffness in kPa.
- Statistical confidence map is provided for reliability assessment.

# MR Elastography Extension

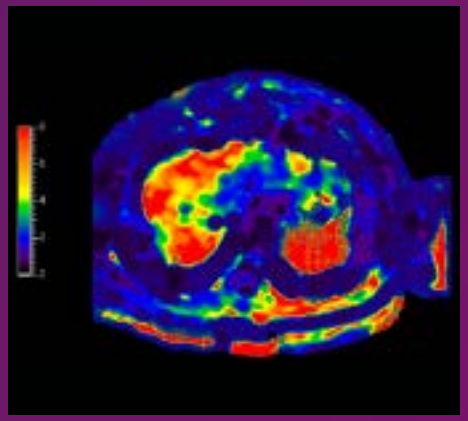


# More robust liver tissue stiffness maps

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**

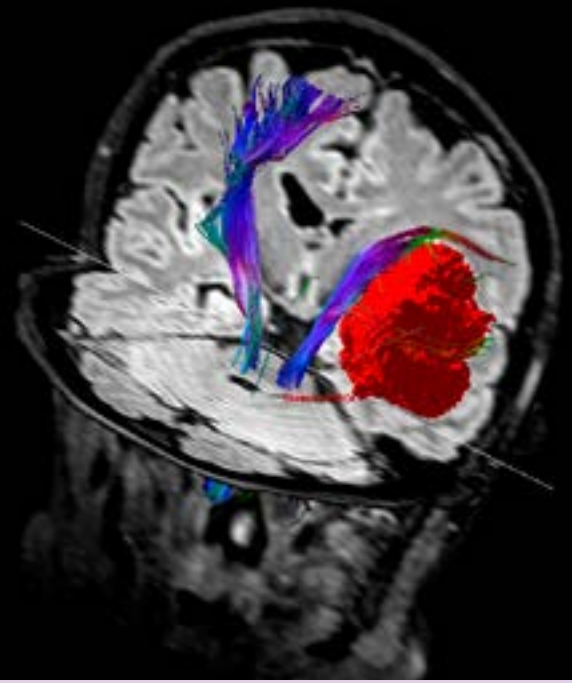


**MRE, 8 slices in a single breath hold of 16 seconds**

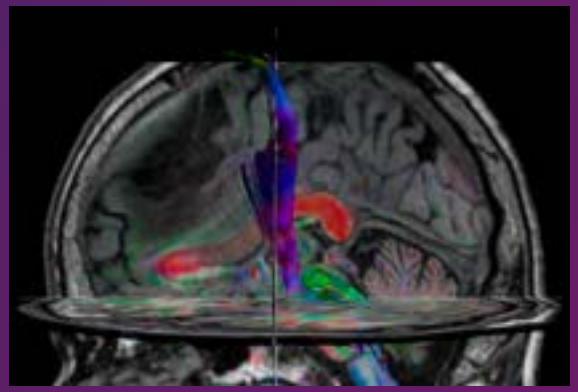
1 Compared to Philips MR Elastography (gradient echo), at 3.0T.

# MR FiberTrak

# DTI tractography reconstruction



Provides visualization and quantification of white matter structure in the brain and spinal tracts using task guidance for generating common or user-defined tracts. This supports advanced anatomical brain assessments via DTI tractography reconstruction.



**Visualization of white matter tracts**

**Additional information:**

- The guidance panel suggests which regions of interest and plane are common for identification of certain tracts such as the corticospinal tract.
- The results can be overlaid with other data like fMRI or anatomical series.
- Allows evaluation of fiber tracts around tumors and lesions in combination with functional areas.
- Supports DICOM-based output with merged anatomical tractography information through the Multi Modality Viewer.

# 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

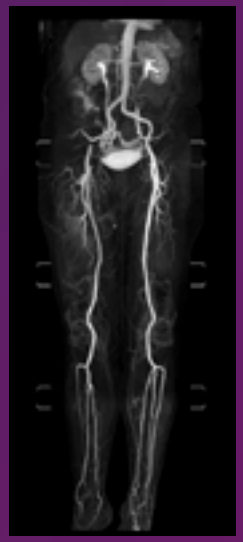
**Additional information:**

- The tool applies a generalized linear regression model to analyze block paradigms, event-related paradigms, and resting state data.
- The paradigms can be user-defined or imported.
- Supports export of functional results including DICOM-based images with co-registered anatomical and fMRI maps.

# MR MobiView

# Easy viewing of multi-station studies

MR MobiView combines multiple images into a single full-field view to review multi-station acquisitions. This is easily accomplished by fusing images in the head-feet direction. MR MobiView automatically combines “stitches“ images from multiple acquisitions of the same examination to create one overall volume.

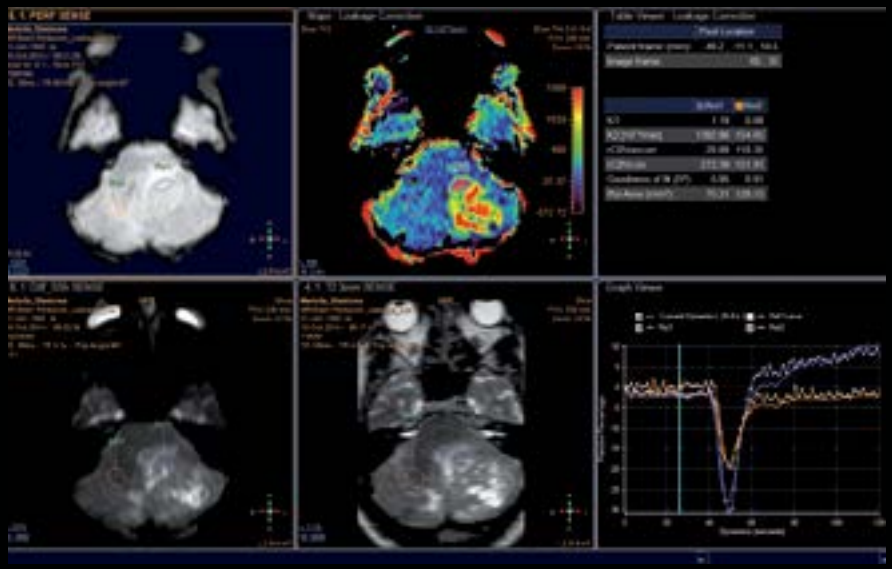


**Additional information:**

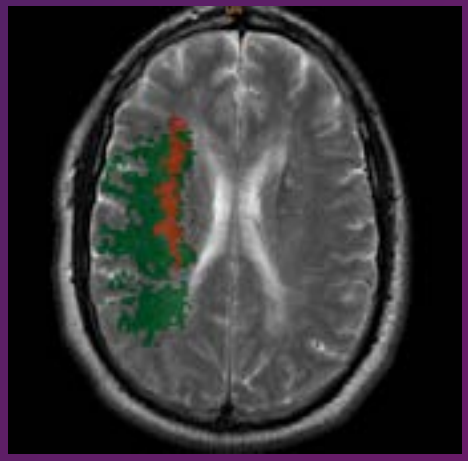
- Key clinical cases are MRA run-offs, whole-body metastases screening from eye-to-thigh, and total spine views to show the complete CNS.
- The resulting image series can be viewed, filmed, and exported using a DICOM compliant tool.

# MR Neuro Perfusion

# MR parametric brain analysis



MR Neuro Perfusion supports MR parametric brain analyses by evaluating DSC T2* perfusion studies and supporting the visualization and quantification of diffusion perfusion mismatch. MR Neuro Perfusion provides physicians with supporting information for the evaluation of stroke, or assessment and follow-up of brain tumors. The application supports the analysis of T2* Perfusion studies to generate parametric data including TTP, MTT or Tmax.

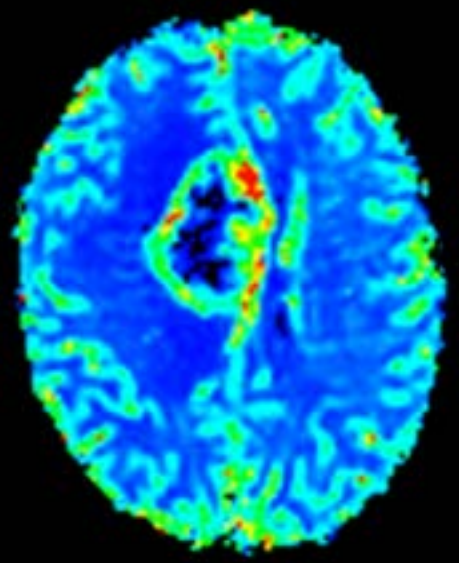


**Additional information:**

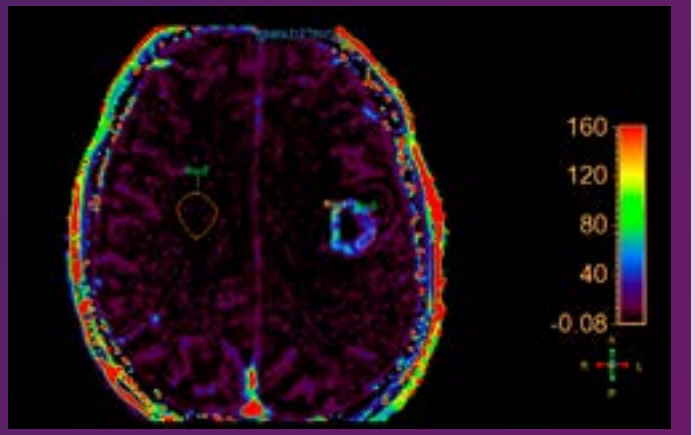
- Offers several analysis techniques such as leakage correction, which allows to assess the time intensity curves where there is no proper recovery of the baseline after contrast passage, and manual arterial input function (AIF) which enables perfusion-diffusion mismatch if a Diffusion input dataset is available in addition to the Perfusion series.
- The package includes user-selected color coding of the functional data, and maps can be viewed and stored as overlays on anatomical reference images.

# MR Permeability

# Lesion characterization by reviewing vascular leakage



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. Its use plays an important role in oncology.



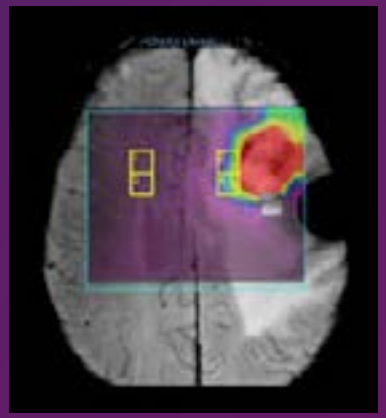

**Parametric map helping to analyze tissue response**

**Additional information:**

- Calculates parametric maps such as Ktrans, Kep, ve and vf.
- The application has been validated for prostate and brain cancer.

# MR SpectroView
# Review metabolite maps

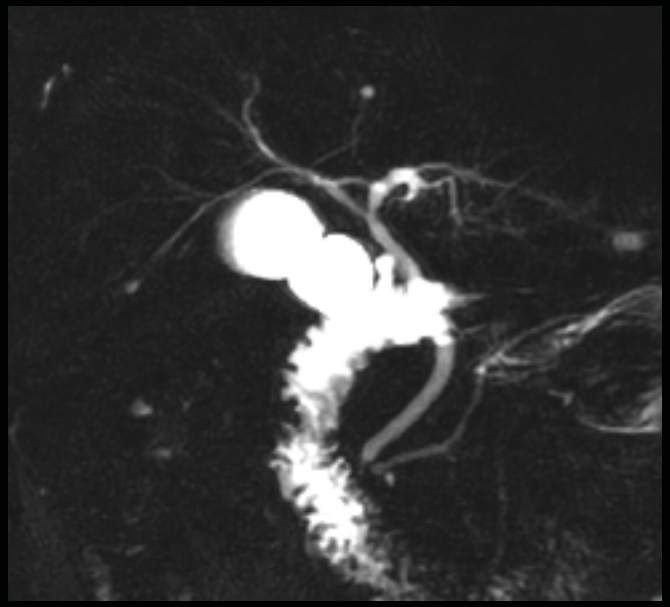
MR SpectroView is a task-guided application providing hydrogen single voxel spectra as well as metabolic and ratio maps. It automatically identifies the anatomy to preselect appropriate metabolites or supports user-defined combination of metabolites.



**Detection of GABA with single voxel MEGA MR Spectroscopy**

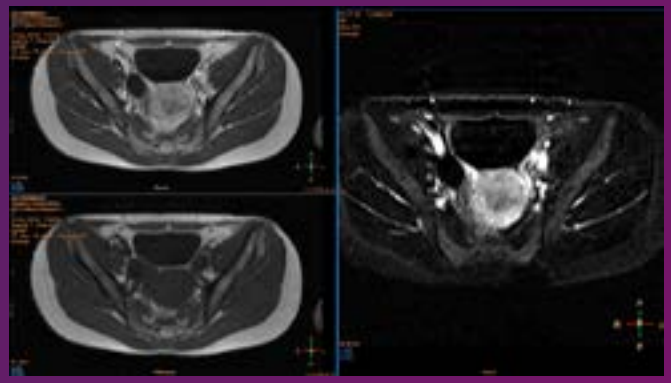
**Additional information:**

- Displays numerical information about metabolites including Peak position and label, SNR, Peak Height, Peak Area, Full Width Half Maximum and Area Ratio of the displayed spectrum.
- Provides metabolite and ratio maps as color overlay on anatomical images or mini spectra on a voxel by voxel basis. Multiple voxels can be selected for spectral comparison.
- Supports automatic and manual phase adjustment as well as a color-coded quality indicator based on field homogeneity and SNR.



# MR Subtraction
# Perform basic calculations between two volumes

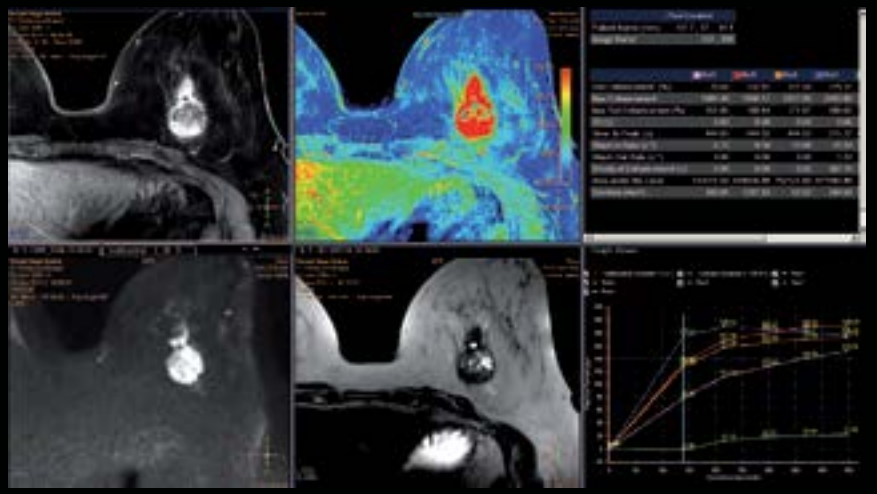
MR Subtraction enables basic calculations between two volumes, including addition, subtraction and ratio from within a single dynamic series.



**Additional information:**

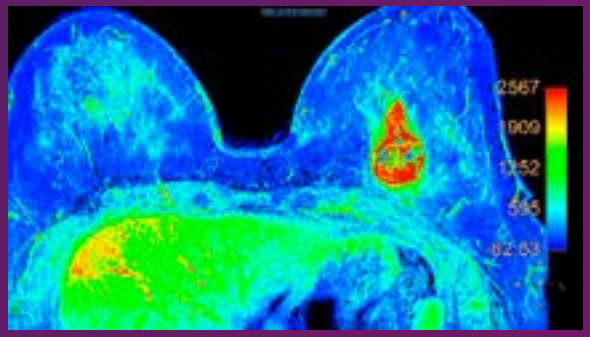
- The application allows to subtract pre-contrast from post-contrast series.
- Weighing factors can be applied to impact the calculation.

# MR T1 Perfusion



## Review blood supply characteristics

Designed to evaluate time intensity curves of a T1 signal enhancement series, supporting in assessing lesions by reviewing blood supply characteristics. The application produces measurements including relative enhancement, maximum enhancement, time to peak (TTP), and wash-in/ wash-out rates.



**Additional information:**

- The package includes user-selected color-coding of the parametric maps which can be viewed and stored as overlays on anatomical reference images.
- The opacity of the overlay is user-defined.
- The series can be referenced to any other series such as Diffusion data within the same study.

# **MR** Workspace

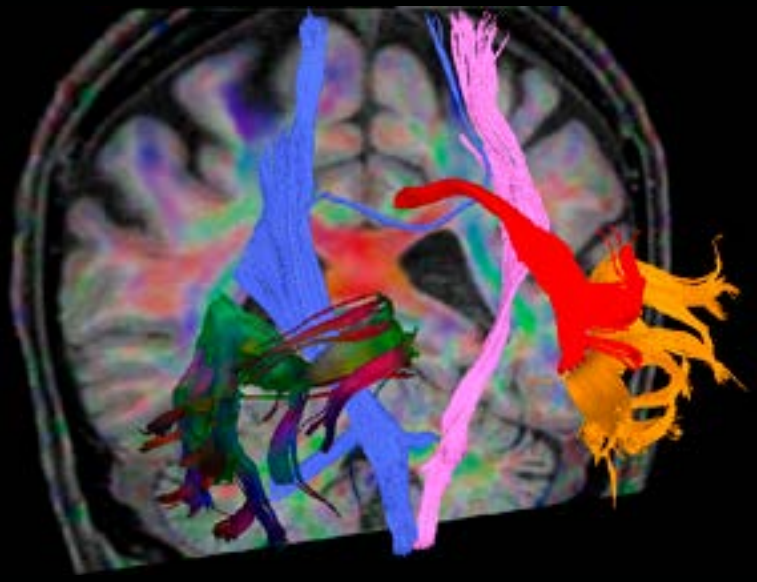
MR Workspace supports efficiency and staff satisfaction in the control room through intelligence, guidance and ease of use. Technologists can prepare exams before patients arrive and aim to achieve consistent quality regardless of experience, by using Protocol Assistant, an AI[1]-driven solution that 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.

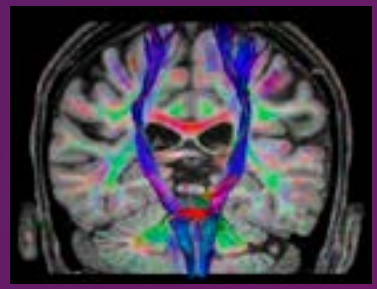
1 According to the definition of AI from the EU High-Level Expert Group.
2 The addition of step-by-step guidance and automation of routine and complex post-processing applications can now be performed by the technologist on the console, saved via bookmark functionality, and handed off to the radiologist, which reduces time to results.

# MultiBand SENSE

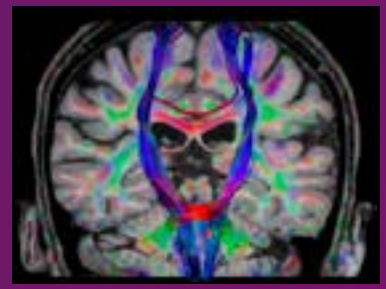
# High speed, high resolution fMRI and DTI studies



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]

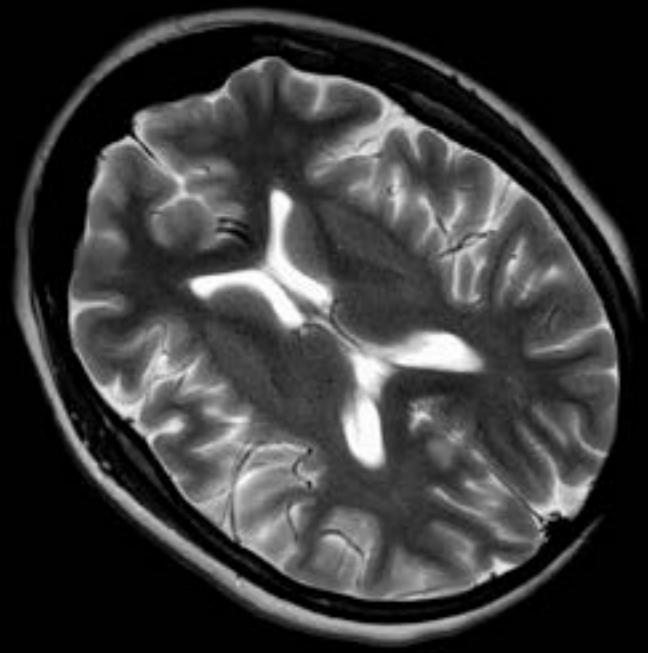


**DTI**
16 directions
6:51 min



**DTI with MultiBand SENSE**
16 directions
3:37 min

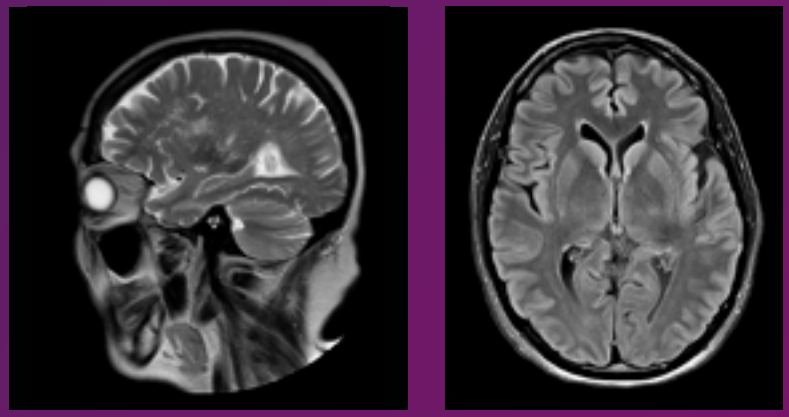
1 Compared to Philips DTI/fMRI scans without MultiBand SENSE.
2 Up to a MultiBand SENSE factor of 2.



# MultiVane XD

# Motion-free imaging in short scan time

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

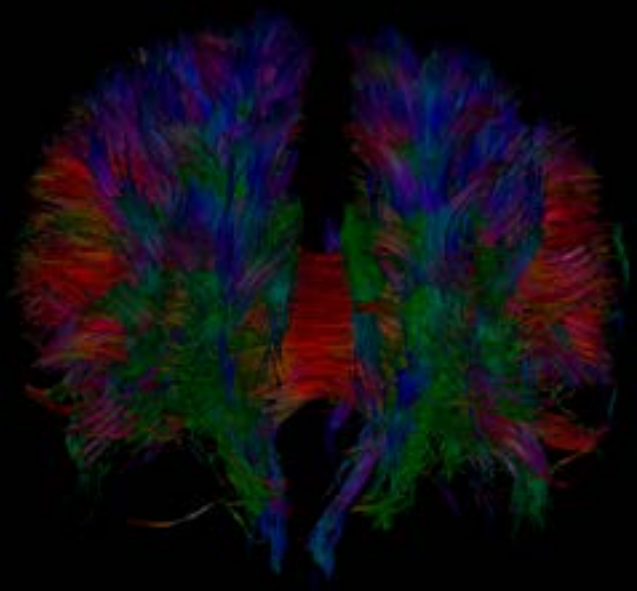


**Diagnostic images, even in the case of severe patient motion**

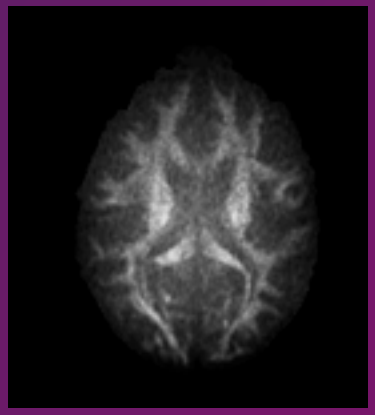
1 Compared to Multivane, thanks to compatibility with dS SENSE.

# 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

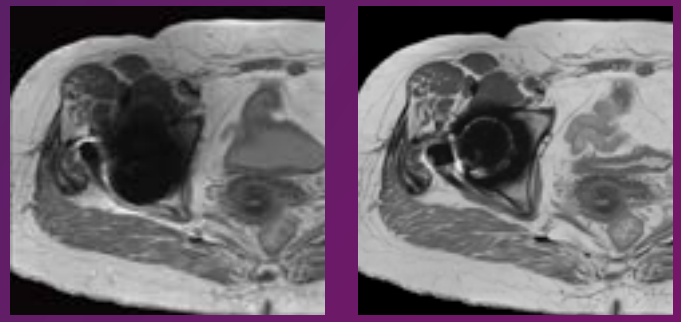
NeuroScience extension is an add-on to the comprehensive NeuroScience option. The extension brings your multi-shell DTI studies to a higher level. Advanced diffusion gradient control gives the scientific user control of the diffusion encoding gradient duration through selection of multiple diffusion 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)**

# O-MAR

# Efficient near-metal soft tissue and bone imaging

O-MAR (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:**

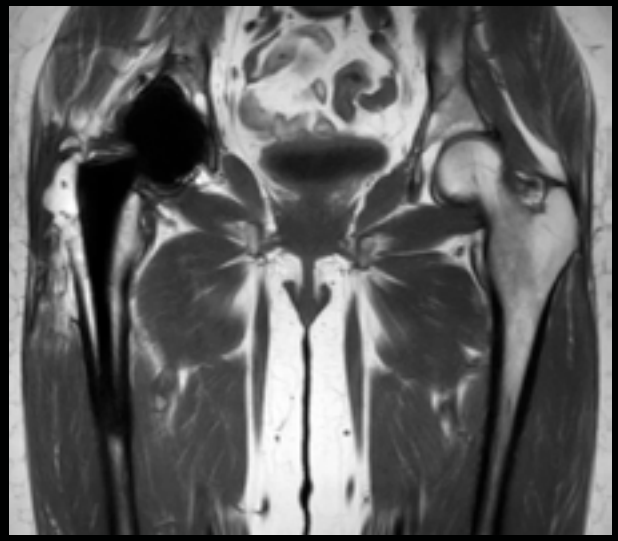
- Reduction of in-plane susceptibility artifacts[2] caused by metal implants[1].
- Supports most relevant image contrasts (T1w, T2w, PDw, and STIR).
- Extending MARS (Metal Artifact Reduction Sequence) with the View Angle Tilting (VAT).

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

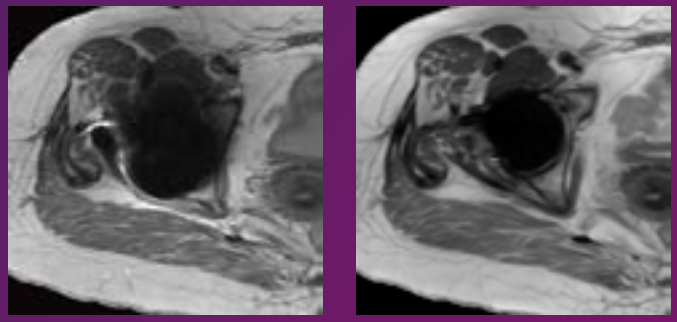
2 Compared to standard high bandwidth spin-echo based techniques.

# 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.



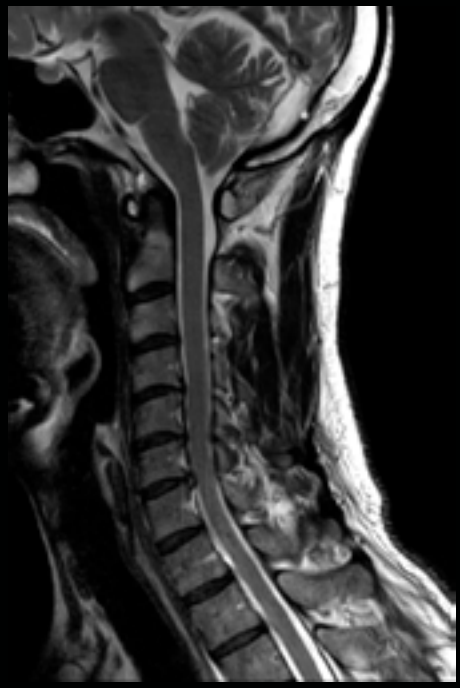
1 Only for use with MR Safe or MR Conditional implants by strictly following the Instructions for Use.

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

# Pediatric positioning pack

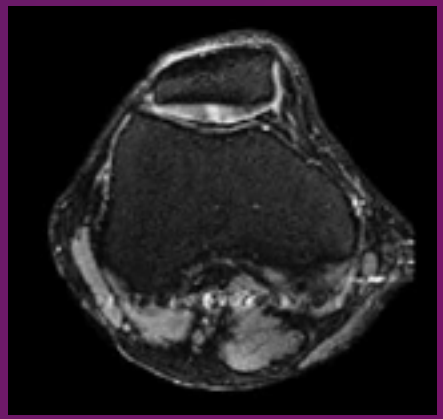
## Taking care of the smallest patients

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.



# ScanTools Pro
# Clinical imaging performance,enhanced workflow, and ease of use

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



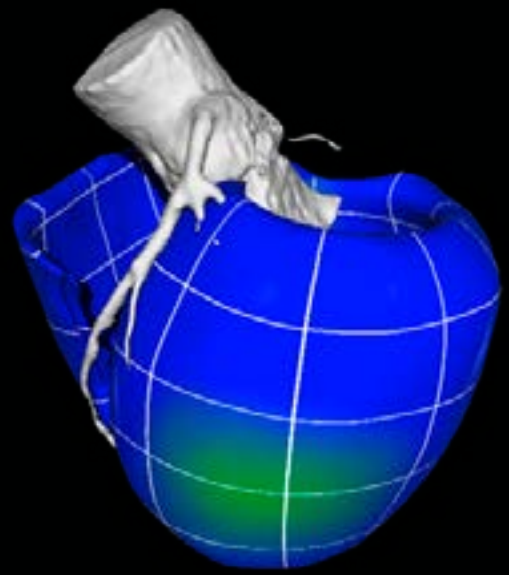
# ScanWise Implant
# A key to confidence withMR Conditional implants

ScanWise Implant software helps you to confidently scan patients within the MR Conditional limits by providing step-by-step guidance to enter the condition values of the implant manufacturer. Your MR system then automatically applies these values for the entire examination helping you to simplify your scanning process for patients with MR Conditional implants. With ScanWise Implant you can increase referrals of patients with MR Conditional implants to your institution by confidently offering MR imaging to this growing patient population.

**Additional information:**

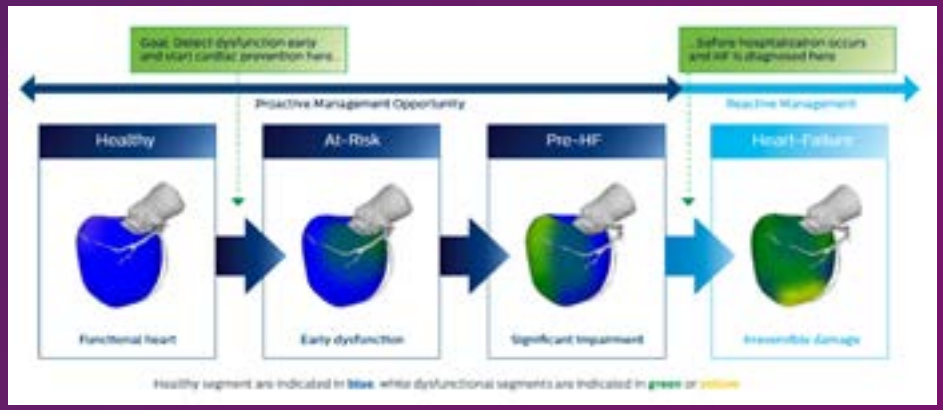
- Can be used in routine exams, like brain, spine and MSK.
- Step-by-step guidance of scanning parameters as to adhere to the implant manufacturer conditional values. Enter parameters for all scans just once.

# SENC
# Identifying asymptomatic patients at risk of heart failure[1]



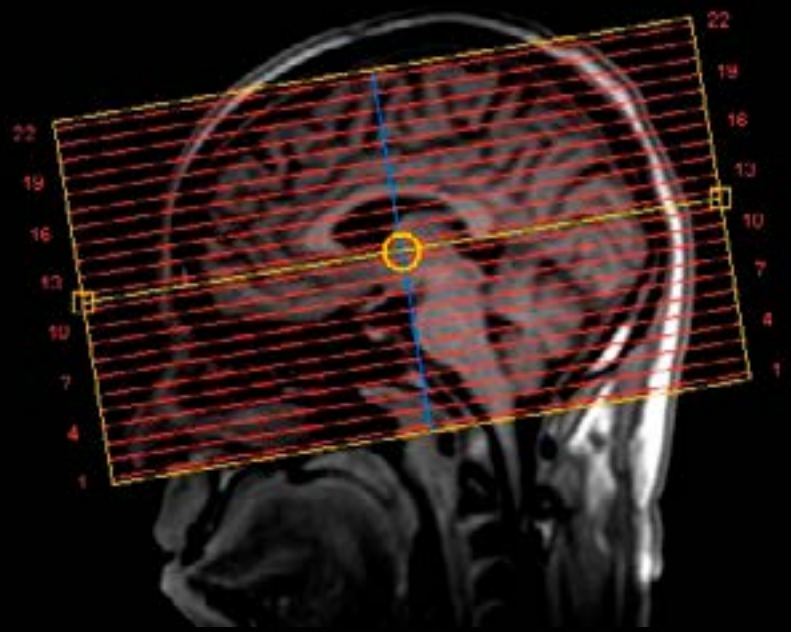
SENC images are processed through Myocardial Solutions software to measure early and subtle changes in the heart function. The strain-encoded (Fast-SENC) time resolved images provided by Philips are used to extract the quantitative strain information per voxel using third party Myocardial Solutions (MyoStrain)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

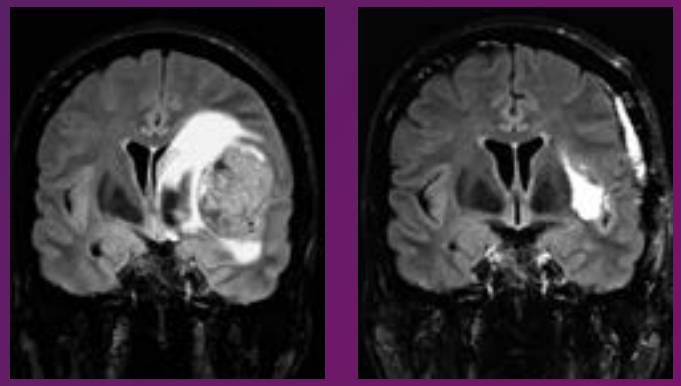
1. Due to image processing through Myocardial Solutions software. Korosoglou G, et al. ESC Heart Failure. 2019 Aug;6(4):548-602



# 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:**

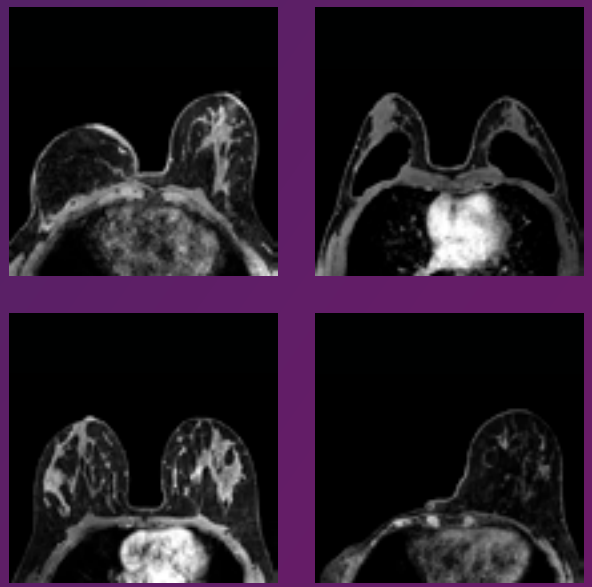
- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning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

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

# SmartExam 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.



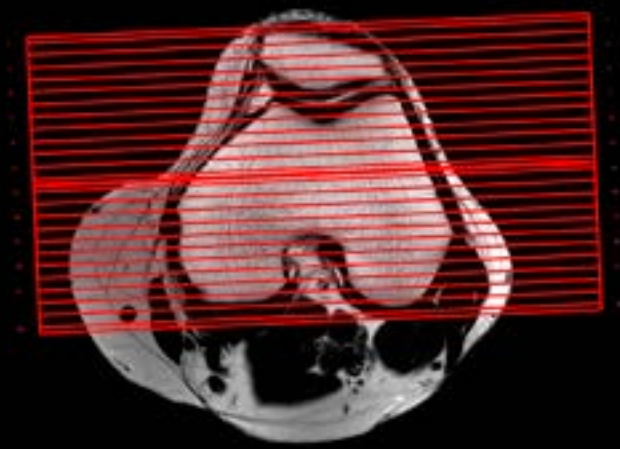
**Consistent fat suppression for every patient**

**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.

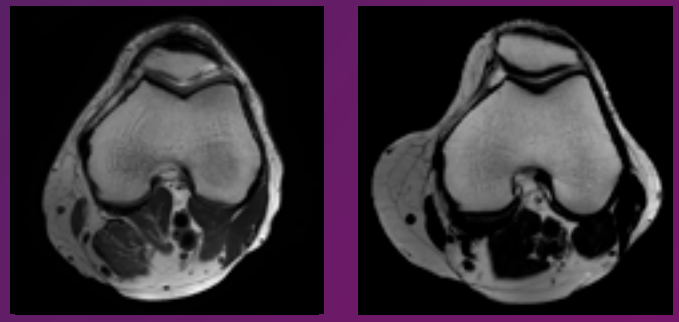
1 SmartExam is not available to patients with MR Conditional implants.

# 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**

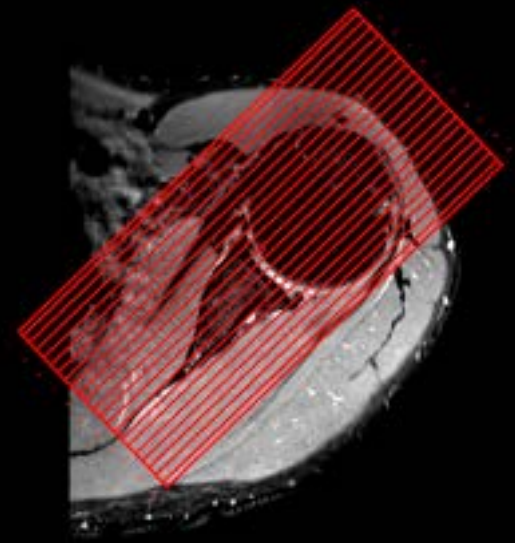
**Additional information:**

- 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.

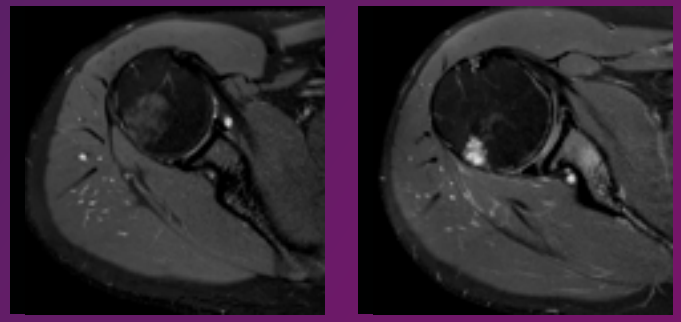
1 SmartExam is not available to patients with MR Conditional implants.

# SmartExam Shoulder

## Standardized exams for consistent MRI results



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



**Consistent reading for any patient**

**Additional information:**

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

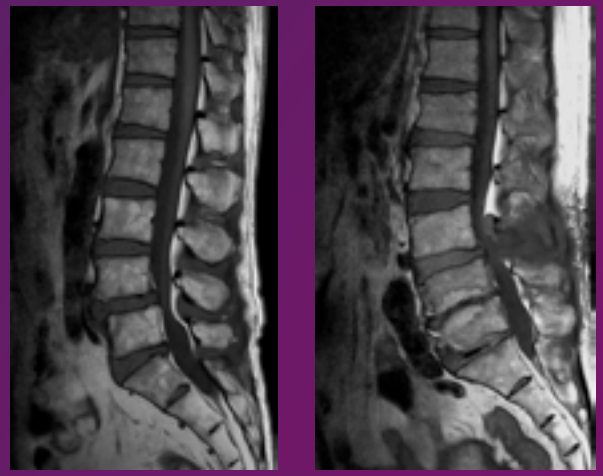


1 SmartExam is not available to patients with MR Conditional implants.

# SmartExam Spine

# Standardized exams for consistent MRI results

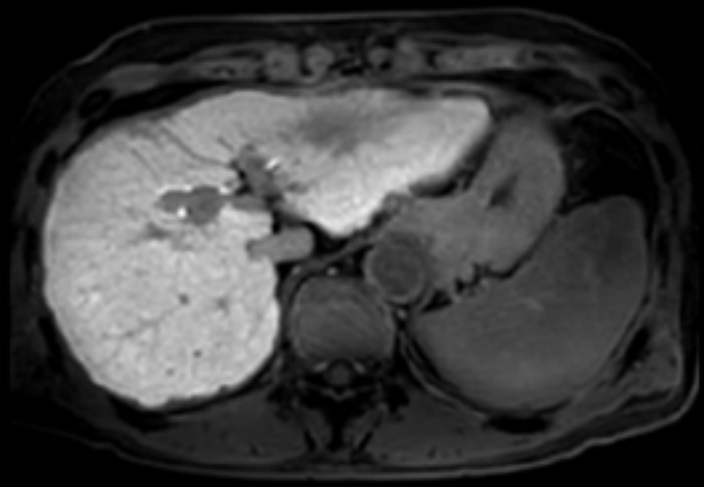

SmartExam Spine[1] assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams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



**Consistent reading for any patient**

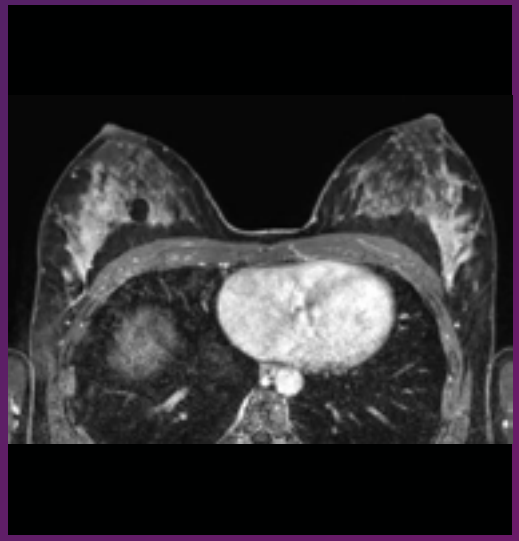
**Additional information:**

- 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.



# 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**

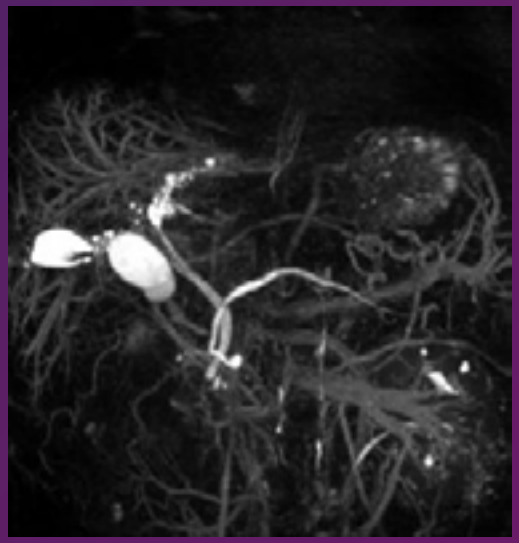
**Additional information:**

- 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 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.



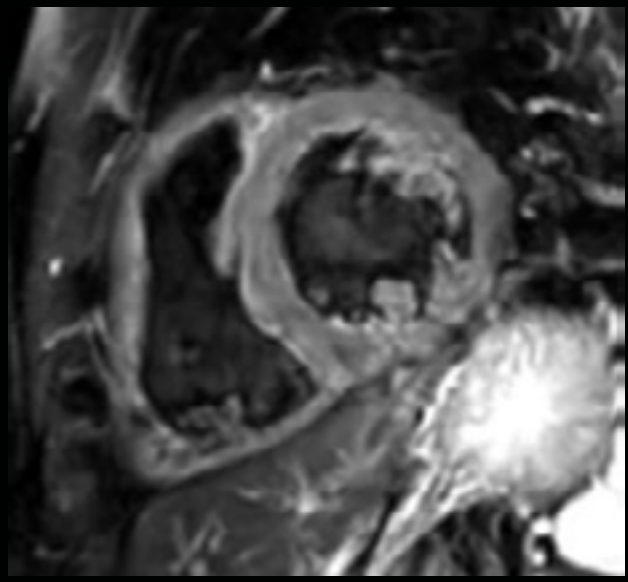
**High quality 3D MRCP imaging**

**Additional information:**

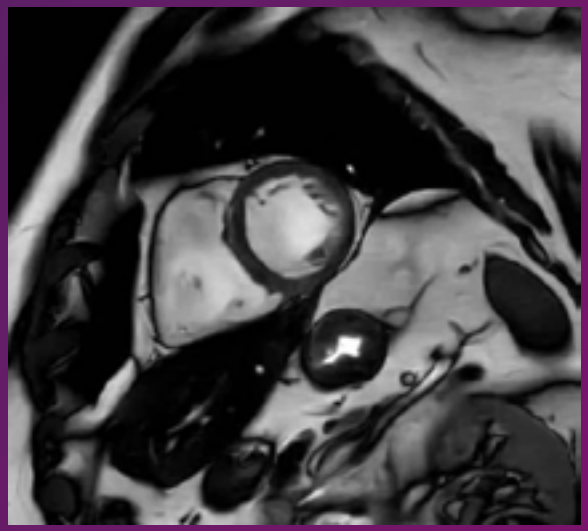
- Up to 3 times faster with no loss in image quality[2]
- Up to 65% higher resolution and improved SNR[2]
- Improve your productivity with reduced exam time without losing image quality
- Improve signal to noise ratio for challenging anatomies

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

# 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.

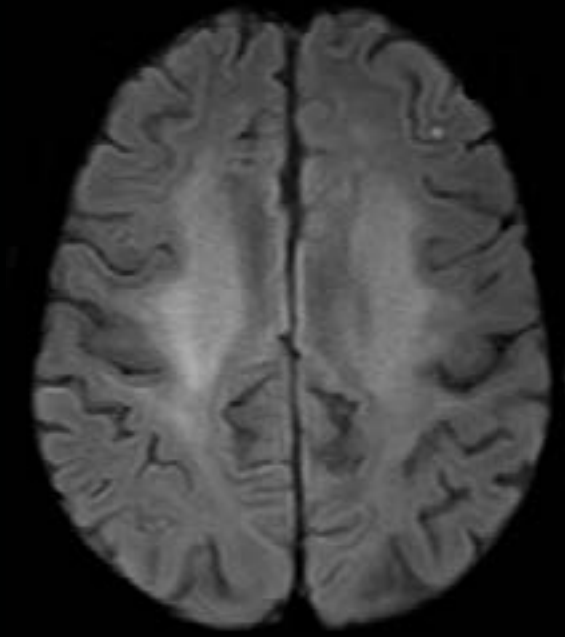


**Fast cardiac cine imaging**

**Additional information:**

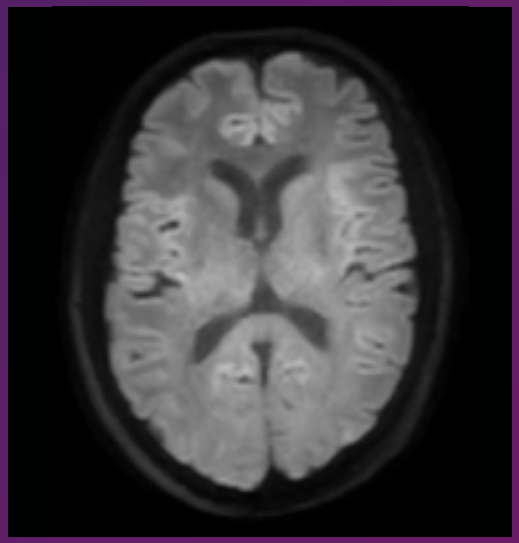
- Up to 3 times faster with no loss in image quality[2]
- Up to 65% higher resolution and improved SNR[2]
- Improve your productivity with reduced exam time without losing image quality
- Improve signal to noise ratio for challenging anatomies

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



# 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**

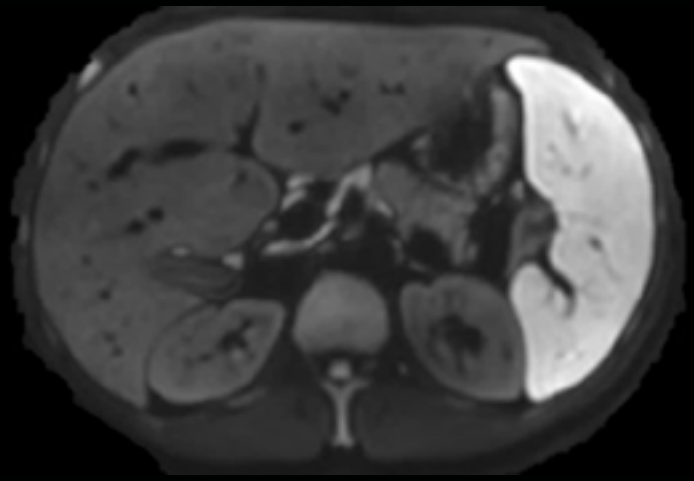
**Additional information:**

- 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

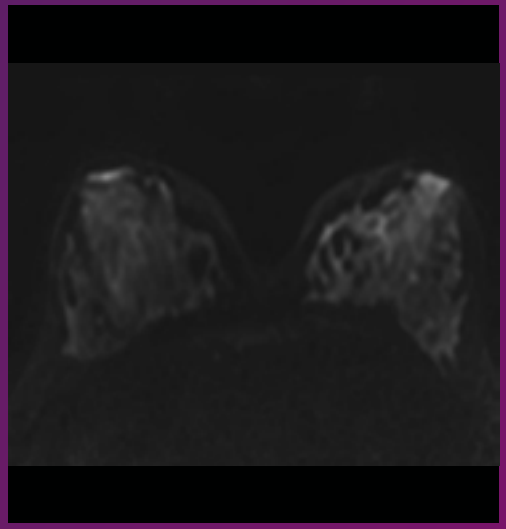
1 Compared to Philips DWI
2 Compared to Philips SENSE

# 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:**

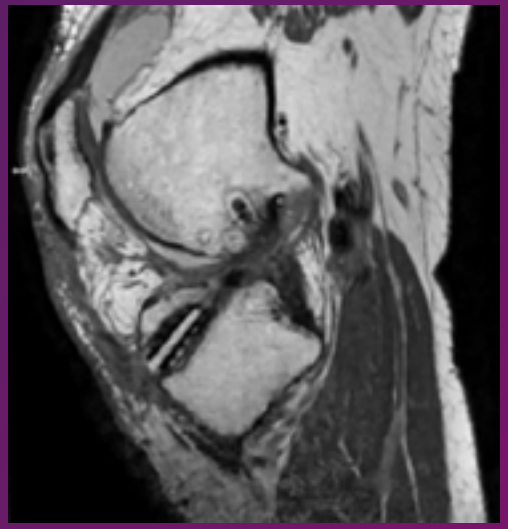
- Up to 3 times faster with no loss in image quality[2]
- Up to 65% higher resolution and improved SNR[2]
- Improve your productivity with reduced exam time without losing image quality
- Improve signal to noise ratio for challenging anatomies

1 Compared to Philips DWI
2 Compared to Philips SENSE

# 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**

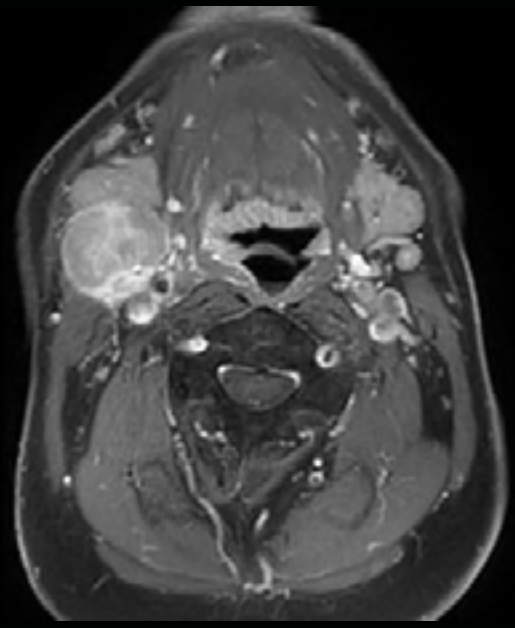
**Additional information:**

- 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

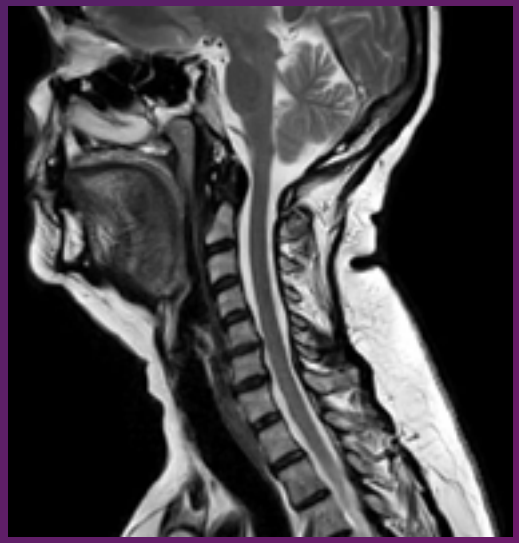
1 Compared to Philips O-MAR XD
2 Compared to Philips SENSE

# SmartSpeed 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.

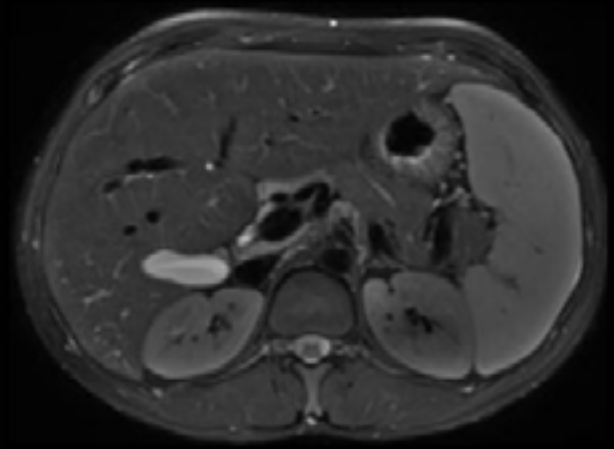


**Motion free neck imaging**

**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

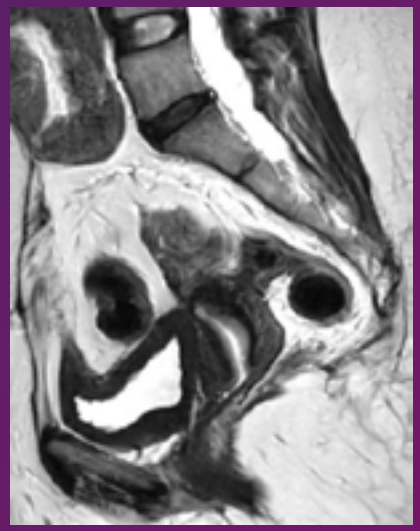
1 Compared to Philips SENSE



# 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

1 Compared to Philips SENSE

# SmartSpeed MSK
# Image quality and speed without compromise

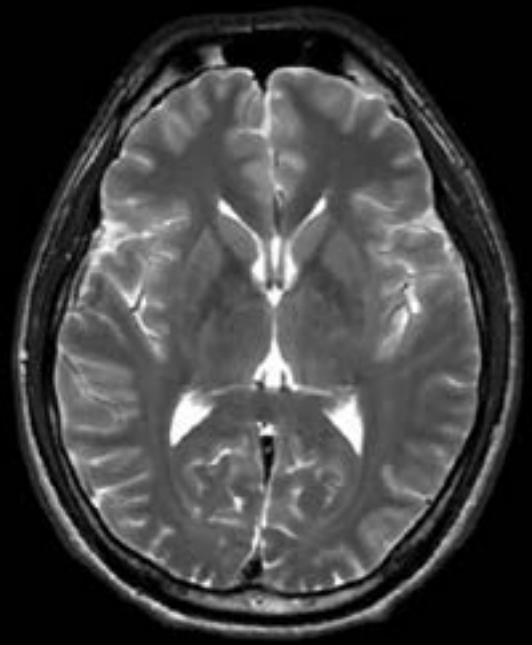
Philips SmartSpeed delivers image quality and speed at your fingertips. It utilizes the Compressed SENSE speed engine to reduce scan time and an award-winning AI algorithm applied directly at the beginning of the MR reconstruction chain to maximize information and deliver outstanding image quality to 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 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:**

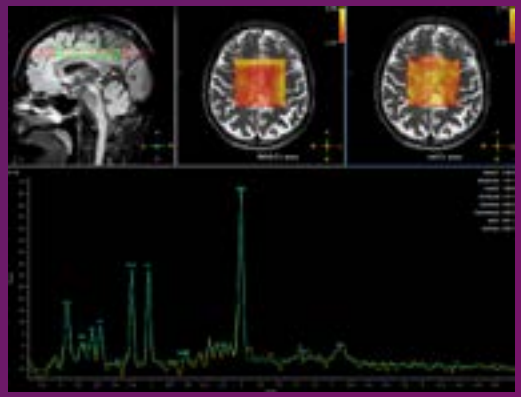
- Up to 3 times faster with no loss in image quality[2]
- Up to 65% higher resolution and improved SNR[2]
- Improve your productivity with reduced exam time without losing image quality
- Improve signal to noise ratio for challenging anatomies

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

## Spectroscopy

# Fully integrated proton spectroscopy

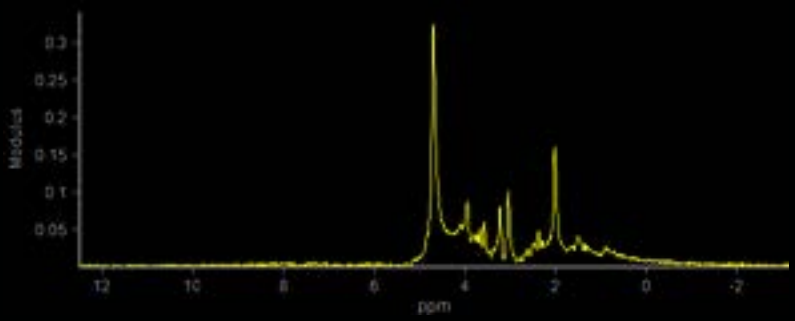
Spectroscopy Specialist provides extra information about the spatial distribution of metabolites in the brain. This package provides a set of single voxel, multi-voxel and multi-slice proton spectroscopy, fully integrated into the MRI console. To reduce scan time, a combination of Turbo Spectroscopic 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.



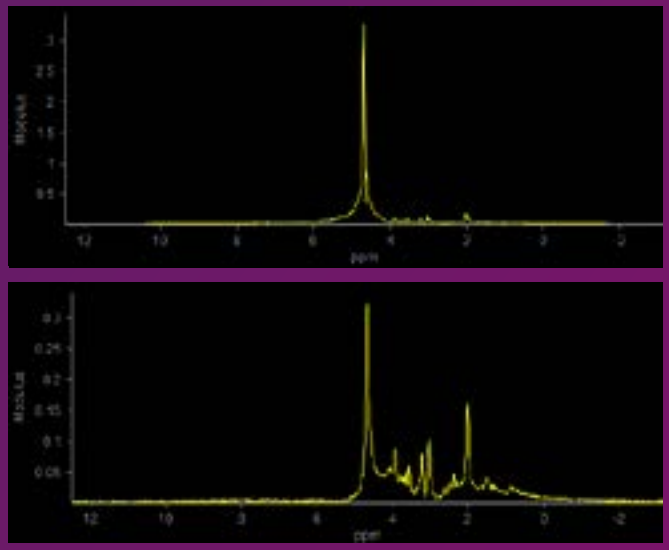
**Spectroscopic imaging**

# Spectroscopy XD

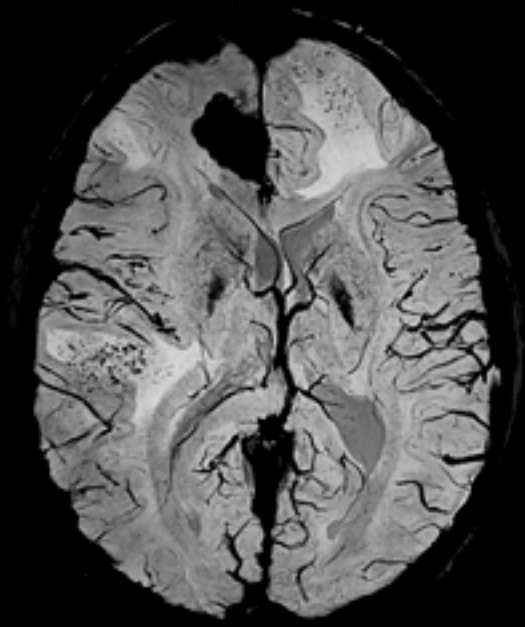
# More precise and more robust MR brain spectroscopy




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.



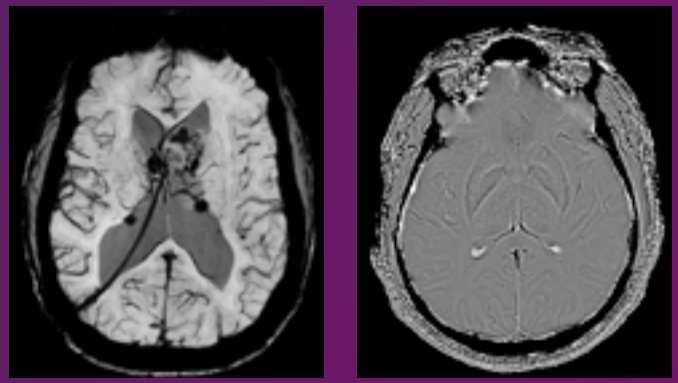
**No VAPOR, amplitude ~3.5 (top) versus VAPOR, amplitude ~0.35 (bottom)**



## SWIp

# Exquisite susceptibility contrast

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

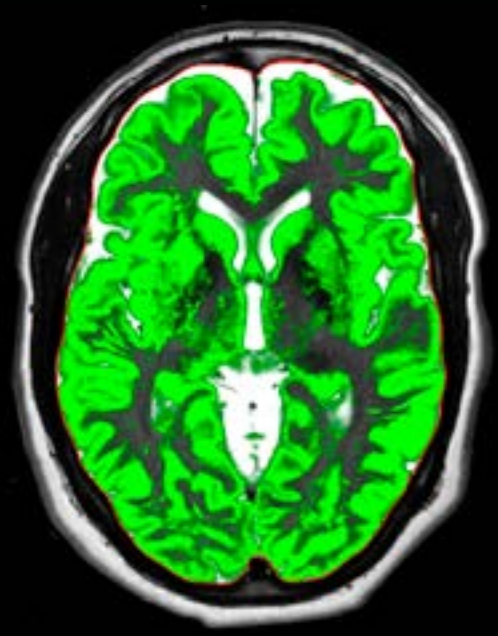


3D susceptibility weighted brain imaging, including phase maps

**Additional information:**

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

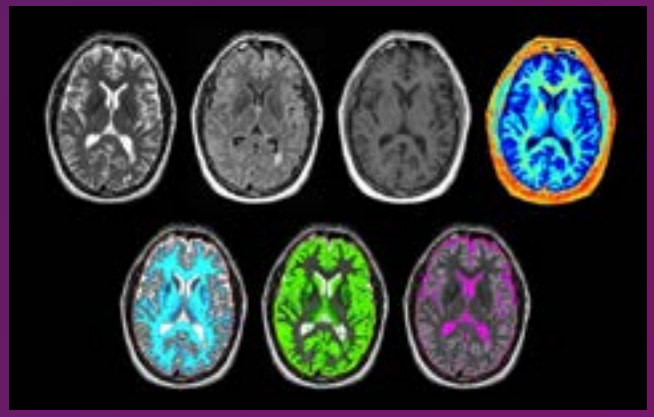
1 Due to multi-echo approach.



## SyntAc

# Exploring neuro-radiology with synthetic MR imaging

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. SyMRI NEURO, Synthetic MR, AB, Sweden. Not available in the USA

# VitalScreen

# Guidance at your fingertips

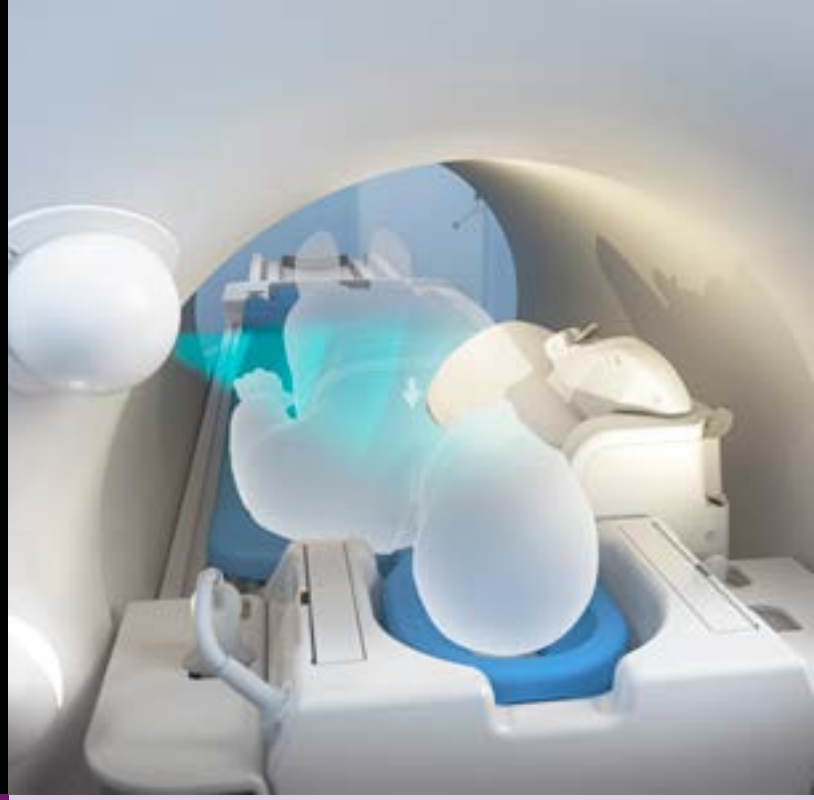

VitalScreen (unilateral) offers guidance and insights on the details of the current patient study. This unilateral 12-inch interactive touchscreen provides information on exam duration, which coil to use, patient positioning, physiology signal captors (VCG & respiratory) and – if applicable – contrast 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.

# 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.

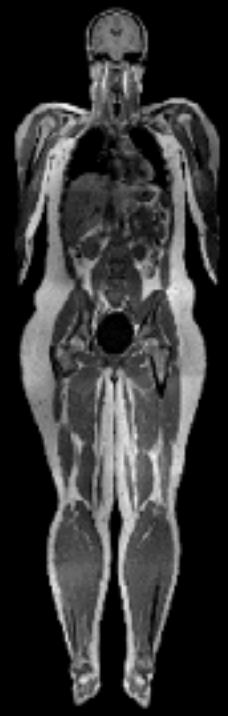
**Additional information:**

- 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].

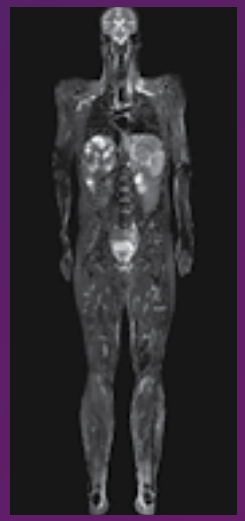


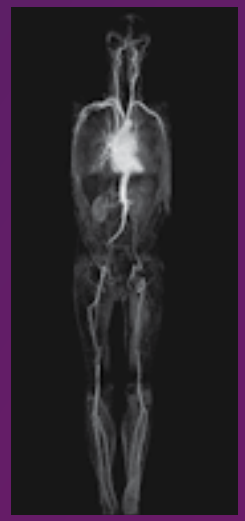
1. Requires an unobstructed line-of-sight.

# Whole Body
# Fast head to toe scanning



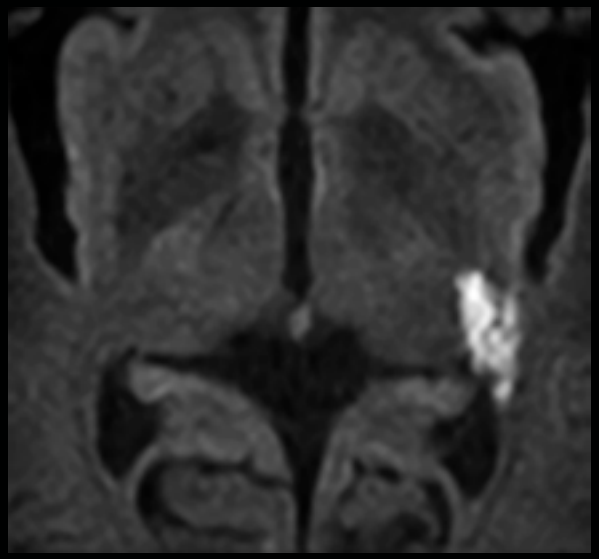
Whole Body package allows rapid, automated whole body imaging with an effective field of view of 2.1 m (7 ft). Combined with Exam Cards, it delivers complete multi-station head to toe coverage in a single pass by combining all imaging sequences per station. Whole Body Specialist supports whole body oncology and vascular imaging studies. Full coverage with a reduced number of stations due to system's large field of view.





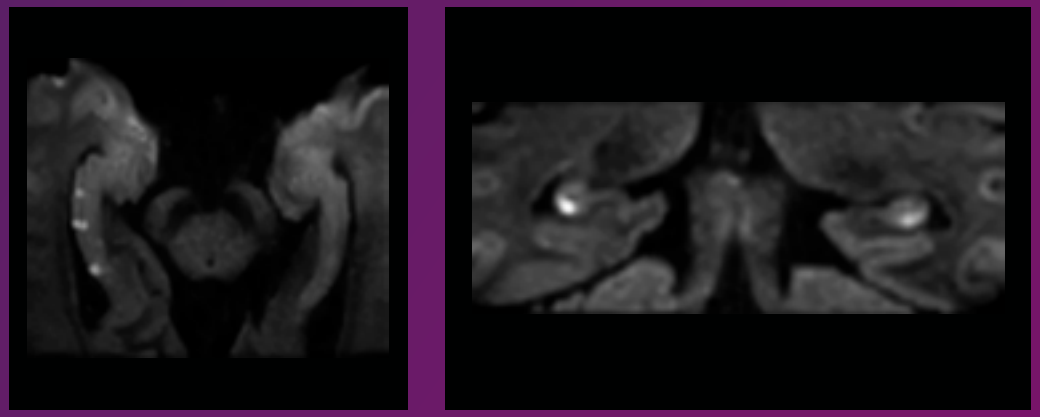
**Additional information:**

- Fast and comfortable whole body imaging
- Perform complete examinations without needing additional surface coils
- Expands applications and increases referral base
- Feet first whole body scanning supporting patient comfort
- No radiation exposure for patients or clinicians
- Single pass head to toe coverage



# 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**




4522 991 79861 * OCT 2023

www.philips.com/mrclinicalapplications