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# 

TA: 25 sec Coil Selection: Auto Voxel Size: 0.5×0.5×6.0 mm³ Acc:: None Rel. SNR: 1.00

# **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Slice Group 2 Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Slice Group 3 Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Slice Group 3 Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Phase Oversampling 0 % FoV Read 250 mm FoV Phase 100.0 % Slice Thickness 6.0 mm	Routine	
Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slice Group         2           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Slice Group	1
Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slice Group         2           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Slices	5
Orientation Sagittal Phase Encoding Dir. P >> A  Slice Group 2  Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Slice Group 3 Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Phase Oversampling 0 % FoV Read 250 mm FoV Phase 100.0 %	Distance Factor	100 %
Phase Encoding Dir.         P >> A           Slice Group         2           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slice Group         3           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Position	L86.0 A30.0 H0.0 mm
Slice Group         2           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slice Group         3           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Orientation	Sagittal
Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slice Group         3           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Phase Encoding Dir.	P >> A
Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slice Group         3           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Slice Group	2
Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Slice Group         3           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Slices	5
Orientation Sagittal Phase Encoding Dir. P >> A  Slice Group 3  Slices 5 Distance Factor 100 % Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Phase Oversampling 0 %  FoV Read 250 mm FoV Phase 100.0 %	Distance Factor	100 %
Phase Encoding Dir.         P >> A           Slice Group         3           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Position	L86.0 A30.0 H0.0 mm
Slice Group         3           Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Orientation	Sagittal
Slices         5           Distance Factor         100 %           Position         L86.0 A30.0 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Phase Encoding Dir.	P >> A
Distance Factor	Slice Group	3
Position L86.0 A30.0 H0.0 mm Orientation Sagittal Phase Encoding Dir. P >> A  Phase Oversampling 0 % FoV Read 250 mm FoV Phase 100.0 %	Slices	5
Orientation         Sagittal           Phase Encoding Dir.         P >> A           Phase Oversampling         0 %           FoV Read         250 mm           FoV Phase         100.0 %	Distance Factor	100 %
Phase Encoding Dir. P >> A  Phase Oversampling 0 %  FoV Read 250 mm  FoV Phase 100.0 %	Position	L86.0 A30.0 H0.0 mm
Phase Oversampling 0 % FoV Read 250 mm FoV Phase 100.0 %	Orientation	Sagittal
FoV Read         250 mm           FoV Phase         100.0 %	Phase Encoding Dir.	P >> A
FoV Phase 100.0 %	Phase Oversampling	0 %
	FoV Read	250 mm
Slice Thickness 6.0 mm	FoV Phase	100.0 %
	Slice Thickness	6.0 mm
TR 8.3 ms	TR	8.3 ms
TE 3.57 ms	TE	3.57 ms
Averages 1	Averages	1
Concatenations 15	Concatenations	15
AutoAlign	AutoAlign	

## **Contrast - Common**

TR	8.3 ms
TE	3.57 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard

#### **Contrast - Common**

Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

## **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

# **Resolution - Common**

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	75 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	None
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

## **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

1
5
100 %
L86.0 A30.0 H0.0 mm
Sagittal
P >> A
2
5
100 %
L86.0 A30.0 H0.0 mm
Sagittal
P >> A
3
5
100 %
L86.0 A30.0 H0.0 mm
Sagittal
P >> A
0 %

# **Geometry - Common**

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	8.3 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	15

# Geometry - AutoAlign

Slice Group	1
Position	L86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	2
Position	L86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	3
Position	L86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
AutoAlign	
Initial Position	L86.0 A30.0 H0.0
L	86.0 mm
Α	30.0 mm
Н	0.0 mm
Initial Orientation	Sagittal
Initial Rotation	-180.00 deg

# **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

# **System - Miscellaneous**

Coil Selection	Auto Coil Select
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
CoilShim	Off

# **System - Adjustments**

Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	8.3 ms
Segments	1
Concatenations	15

# Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	250 mm
FoV Phase	100.0 %
Phase Resolution	75 %

# Physio - PACE

Resp. Control	Off
Concatenations	15

## Inline - Liver

Liver Registration	Off
Save Original Images	On

## Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

## Inline - MIP

MIP Sag	Off	
MIP Cor	Off	
MIP Tra	Off	
MIP Time	Off	

# Inline - MIP

Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

# Inline - Composing

Inline Composing	Off
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# Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	250 Hz/Px
Asymmetric Echo	Allowed
Segments	1

# Sequence - Part 2

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

SAR Assistant Off
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# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\t2\_tse\_tra-AAT-DRB \*

TA: 48 sec Coil Selection: Auto Voxel Size: 0.2×0.2×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L68.9 A7.7 F31.1 mm
Orientation	T > C-3.4 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	6620.0 ms
TE	84.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	6620.0 ms
TE	84.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

#### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

# **Resolution - Common**

FoV Read 160 mm		FoV Read	160 mm
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#### **Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	384
Phase Resolution	70 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	30
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L68.9 A7.7 F31.1 mm
Orientation	T > C-3.4 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	6620.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L68.9 A7.7 F31.1 mm
Orientation	T > C-3.4 > S0.8
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	L68.9 A7.7 F31.1
L	68.9 mm
A	7.7 mm
F	31.1 mm
Initial Orientation	T > C
T > C	-3.40
> S	0.80

Initial Rotation	86.20 deg

## **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation None
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# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	31 mm
Table Position	F
Inline Composing	Off

# System - Miscellaneous

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	6620.0 ms
Concatenations	1

## Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	70 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Composing

Inline Composing Off
----------------------

## Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	148 Hz/Px
Echo Spacing	10.5 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	6

Introduction	On	
Phase Correction	Off	
Compensate T2 Decay	Off	
Fast Mode	Off	
WARP	Off	
Red. EC Sensitivity	Off	
Acoustic noise reduction	Off	

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# $\label{lem:limblkneelaatoptions} $$ \Physics 2 - AAT\Lower Limb\Knee\AAT options\pd_tse_fs_cor-AAT-DRB * $$$

TA: 53 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	36
Distance Factor	10 %
Position	L75.3 A5.4 F23.8 mm
Orientation	C > S5.6 > T-4.0
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	3950.0 ms
TE	39.00 ms
МТС	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	272
Phase Resolution	80 %
Interpolation	On

## **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	29
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	36
Distance Factor	10 %
Position	L75.3 A5.4 F23.8 mm
Orientation	C > S5.6 > T-4.0
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L75.3 A5.4 F23.8 mm
Orientation	C > S5.6 > T-4.0
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	L75.3 A5.4 F23.8
L	75.3 mm
A	5.4 mm
F	23.8 mm
Initial Orientation	C > S
C > S	5.60

> T	-4.00	
Initial Rotation	-0.82 deg	

# **Geometry - Navigator**

# **Geometry - Saturation**

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	24 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L75.3 A5.4 F23.8 mm
Orientation	C > S5.6 > T-4.0
Rotation	-0.82 deg
R >> L	180 mm
F >> H	180 mm
A >> P	119 mm
Reset	Off

#### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3950.0 ms
Concatenations	1

#### Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off
------------------	-----

## Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	151 Hz/Px
Echo Spacing	9.74 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	11

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_sag-AAT-DRB \*

TA: 59 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Phase Encoding Dir.	H >> F
Phase Oversampling	60 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3570.0 ms
TE	31.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR 3570.0 ms  TE 31.00 ms  MTC Off  Magn. Preparation None  Flip Angle 150 deg  Fat-Water Contrast Fat Saturation  Fat Saturation Weak  Dark Blood Off  Contrasts 1  Wrap-up Magn. None		
MTC Off Magn. Preparation None Flip Angle 150 deg Fat-Water Contrast Fat Saturation Fat Saturation Weak Dark Blood Off Contrasts 1 Wrap-up Magn. None	TR	3570.0 ms
Magn. Preparation None Flip Angle Fat-Water Contrast Fat Saturation Fat Saturation Weak Dark Blood Contrasts 1 Wrap-up Magn. None	TE	31.00 ms
Flip Angle 150 deg Fat-Water Contrast Fat Saturation Fat Saturation Weak Dark Blood Off Contrasts 1 Wrap-up Magn. None	MTC	Off
Fat-Water Contrast Fat Saturation Fat Saturation Weak Dark Blood Off Contrasts 1 Wrap-up Magn. None	Magn. Preparation	None
Fat Saturation Weak Dark Blood Off Contrasts 1 Wrap-up Magn. None	Flip Angle	150 deg
Dark Blood Off Contrasts 1 Wrap-up Magn. None	Fat-Water Contrast	Fat Saturation
Contrasts 1 Wrap-up Magn. None	Fat Saturation	Weak
Wrap-up Magn. None	Dark Blood	Off
1	Contrasts	1
Decement westign Magnitude	Wrap-up Magn.	None
Reconstruction Magnitude	Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	288
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

1
33
10 %
L71.2 A7.2 F27.8 mm
S > C-2.2 > T-1.2
H >> F
60 %
180 mm
100.0 %
3.0 mm
3570.0 ms
Interleaved
Interleaved
1

Slice Group	1
Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	L71.2 A7.2 F27.8
L	71.2 mm
Α	7.2 mm
F	27.8 mm
Initial Orientation	S > C
S > C	-2.20

> T	-1.20
Initial Rotation	88.18 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
special saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	28 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3570.0 ms
Concatenations	1

#### **Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off	

# Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	181 Hz/Px
Echo Spacing	10.3 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	14

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Off
Allowed Delay	30 s

# $\label{lem:limb} $$ \Physics 2 - AAT\Lower Limb\Knee\AAT options\t1\_tse\_sag-AAT-DRB * $$$

TA: 41 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Phase Encoding Dir.	H >> F
Phase Oversampling	60 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	441.0 ms
TE	8.30 ms
Averages	1
Concatenations	3
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	441.0 ms
TE	8.30 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	304
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

## **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

Slice Group	1
Slices	33
Distance Factor	10 %
Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Phase Encoding Dir.	H >> F
Phase Oversampling	60 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	441.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	3

Slice Group	1
Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	L71.2 A7.2 F27.8
L	71.2 mm
Α	7.2 mm
F	27.8 mm
Initial Orientation	S > C
S > C	-2.20

> T	-1.20
Initial Rotation	88.18 deg

## **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	28 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

#### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1 at Cianal/Mada	None
1st Signal/Mode	None
TR	441.0 ms
Concatenations	3

#### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	3

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off
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## Sequence - Part 1

Seguence Name	tse
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	201 Hz/Px
Echo Spacing	8.28 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	4
Echo Trains per Slice	29

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	800.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_tra-AAT-DRB \*

TA: 54 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L68.9 A7.7 F31.1 mm
Orientation	T > C-3.4 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	4390.0 ms
TE	39.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

## **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L68.9 A7.7 F31.1 mm
Orientation	T > C-3.4 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L68.9 A7.7 F31.1 mm
Orientation	T > C-3.4 > S0.8
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	L68.9 A7.7 F31.1
L	68.9 mm
Α	7.7 mm
F	31.1 mm
Initial Orientation	T > C
T > C	-3.40

> S	0.80
Initial Rotation	86.20 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Specia	l Saturation	None	
Specia	i Jaturation	NOHE	

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	31 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L68.9 A7.7 F31.1 mm
Orientation	T > C-3.4 > S0.8
Rotation	86.20 deg
R >> L	160 mm
A >> P	160 mm
F >> H	132 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	4390.0 ms
Concatenations	1

#### Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off
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# Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	150 Hz/Px
Echo Spacing	9.68 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	10

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_space\_fs\_sag-AAT-CS \*

TA: 3:32 min Coil Selection: Auto Voxel Size: 0.4×0.4×0.8 mm³ Acc:: 4.0 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
[' '	Off
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slab Group         1           Slabs         1           Position         L71.2 A7.2 F27.8 mm           Orientation         S > C-2.2 > T-1.2           Phase Encoding Dir.         A >> P           Slices per Slab         160           Phase Oversampling         0 %           Slice Oversampling         0.0 %           FoV Read         160 mm           FoV Phase         93.8 %           Slice Thickness         0.80 mm           TR         900.0 ms           TE         33.00 ms           Averages         1.0           Concatenations         1           AutoAlign         Knee > Standard		
Position         L71.2 A7.2 F27.8 mm           Orientation         S > C-2.2 > T-1.2           Phase Encoding Dir.         A >> P           Slices per Slab         160           Phase Oversampling         0 %           Slice Oversampling         0.0 %           FoV Read         160 mm           FoV Phase         93.8 %           Slice Thickness         0.80 mm           TR         900.0 ms           TE         33.00 ms           Averages         1.0           Concatenations         1	Slab Group	1
Orientation         S > C-2.2 > T-1.2           Phase Encoding Dir.         A >> P           Slices per Slab         160           Phase Oversampling         0 %           Slice Oversampling         0.0 %           FoV Read         160 mm           FoV Phase         93.8 %           Slice Thickness         0.80 mm           TR         900.0 ms           TE         33.00 ms           Averages         1.0           Concatenations         1	Slabs	1
Phase Encoding Dir.         A >> P           Slices per Slab         160           Phase Oversampling         0 %           Slice Oversampling         0.0 %           FoV Read         160 mm           FoV Phase         93.8 %           Slice Thickness         0.80 mm           TR         900.0 ms           TE         33.00 ms           Averages         1.0           Concatenations         1	Position	L71.2 A7.2 F27.8 mm
Slices per Slab Phase Oversampling O Slice Oversampling O FoV Read FoV Phase Slice Thickness TR 900.0 ms TE 33.00 ms Averages Concatenations	Orientation	S > C-2.2 > T-1.2
Phase Oversampling 0 % Slice Oversampling 0.0 % FoV Read 160 mm FoV Phase 93.8 % Slice Thickness 0.80 mm TR 900.0 ms TE 33.00 ms Averages 1.0 Concatenations 1	Phase Encoding Dir.	A >> P
Slice Oversampling 0.0 %  FoV Read 160 mm  FoV Phase 93.8 %  Slice Thickness 0.80 mm  TR 900.0 ms  TE 33.00 ms  Averages 1.0  Concatenations 1	Slices per Slab	160
FoV Read 160 mm  FoV Phase 93.8 %  Slice Thickness 0.80 mm  TR 900.0 ms  TE 33.00 ms  Averages 1.0  Concatenations 1	Phase Oversampling	0 %
FoV Phase       93.8 %         Slice Thickness       0.80 mm         TR       900.0 ms         TE       33.00 ms         Averages       1.0         Concatenations       1	Slice Oversampling	0.0 %
Slice Thickness       0.80 mm         TR       900.0 ms         TE       33.00 ms         Averages       1.0         Concatenations       1	FoV Read	160 mm
TR 900.0 ms TE 33.00 ms Averages 1.0 Concatenations 1	FoV Phase	93.8 %
TE 33.00 ms Averages 1.0 Concatenations 1	Slice Thickness	0.80 mm
Averages 1.0 Concatenations 1	TR	900.0 ms
Concatenations 1	TE	33.00 ms
	Averages	1.0
AutoAlign Knee > Standard	Concatenations	1
	AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	900.0 ms
TE	33.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle Mode	PD Var
Fat-Water Contrast	SPAIR
Fat Saturation	Strong
Dark Blood	Off
Blood Suppression	Off
Wrap-up Magn.	Restore
Reconstruction	Magnitude

## **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement
Reordering	Radial

#### **Resolution - Common**

FoV Read	160 mm
FoV Phase	93.8 %
Slice Thickness	0.80 mm
Base Resolution	224
Phase Resolution	100 %
Slice Resolution	100 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	CS
Total Factor	4.0
Reference Scans	Integrated
Reference Lines PE	24
Reference Lines 3D	24
Phase Partial Fourier	Off
Slice Partial Fourier	Off
Elliptical Scanning	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

Slab Group	1
Slabs	1
Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Phase Encoding Dir.	A >> P
Slices per Slab	160
Phase Oversampling	0 %
Slice Oversampling	0.0 %
FoV Read	160 mm
FoV Phase	93.8 %
Slice Thickness	0.80 mm
TR	900.0 ms
Concatenations	1

Slab Group	1
Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Phase Encoding Dir.	A >> P
AutoAlign	Knee > Standard
Initial Position	L0.0 P0.0 F20.0
L	0.0 mm
P	0.0 mm
F	20.0 mm

Initial Orientation	Sagittal
Initial Rotation	-0.01 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	28 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Performance
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L71.2 A7.2 F27.8 mm
Orientation	S > C-2.2 > T-1.2
Rotation	-1.82 deg
A >> P	150 mm
F >> H	160 mm
R >> L	128 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	3.000

# Physio - Signal

1st Signal/Mode	None
Trigger Delay	0 ms
TR	900.0 ms
Concatenations	1

## **Physio - Cardiac**

Fat-Water Contrast	SPAIR
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	93.8 %
Phase Resolution	100 %

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

## Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off	

#### Sequence - Part 1

Sequence Name	spcR
Dimension	3D
Excitation	Non-sel.
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Reordering	Radial
Bandwidth	399 Hz/Px
Echo Spacing	4.70 ms
Turbo Factor	40
Echo Train Duration	193 ms

## Sequence - Part 2

Introduction Off	
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SAR Assistant	Off
Allowed Delay	0 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\localizer\_sag+cor+tra \*

TA: 25 sec Coil Selection: Auto Voxel Size: 0.5×0.5×6.0 mm³ Acc:: None Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	2
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	3
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Phase Oversampling	O %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	8.3 ms
TE	3.57 ms
Averages	1
Concatenations	15
AutoAlign	

#### Contrast - Common

TR	8.3 ms
TE	3.57 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard

#### **Contrast - Common**

Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	75 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	None
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	2
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	3
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Phase Oversampling	0 %

# **Geometry - Common**

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	8.3 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	15

# Geometry - AutoAlign

Slice Group	1
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	2
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	3
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
AutoAlign	
Initial Position	R86.0 A30.0 H0.0
R	86.0 mm
Α	30.0 mm
н	0.0 mm
Initial Orientation	Sagittal
Initial Rotation	-180.00 deg

# **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

# **System - Miscellaneous**

Coil Selection	Auto Coil Select
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >>> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
CoilShim	Off

# **System - Adjustments**

Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

## System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	8.3 ms
Segments	1
Concatenations	15

# Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	250 mm
FoV Phase	100.0 %
Phase Resolution	75 %

# **Physio - PACE**

Resp. Control	Off
Concatenations	15

## Inline - Liver

Liver Registration	Off
Save Original Images	On

## Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

# Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off

# Inline - MIP

Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

# Inline - Composing

Inline Composing	Off	
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# Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	250 Hz/Px
Asymmetric Echo	Allowed
Segments	1

# Sequence - Part 2

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\t2\_tse\_tra-AAT-DRB \*

TA: 48 sec Coil Selection: Auto Voxel Size: 0.2×0.2×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R82.9 A7.6 F26.4 mm
Orientation	T > C2.3 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	6620.0 ms
TE	84.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	6620.0 ms
TE	84.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

## **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read 160 mm		FoV Read	160 mm
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#### **Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	384
Phase Resolution	70 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	30
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R82.9 A7.6 F26.4 mm
Orientation	T > C2.3 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	6620.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R82.9 A7.6 F26.4 mm
Orientation	T > C2.3 > S0.8
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	R82.9 A7.6 F26.4
R	82.9 mm
Α	7.6 mm
F	26.4 mm
Initial Orientation	T > C
T > C	2.30
> S	0.80

Initial Rotation 93.63 deg
----------------------------

## **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
Special Saturation	None

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	26 mm
Table Position	F
Inline Composing	Off

# System - Miscellaneous

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	6620.0 ms
Concatenations	1

## Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	70 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

# Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	148 Hz/Px
Echo Spacing	10.5 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	6

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# $\label{lem:limblkneelaatoptions} $$ \Physics 2 - AAT\Lower Limb\Knee\AAT options\pd_tse_fs_cor-AAT-DRB * $$$

TA: 53 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	36
Distance Factor	10 %
Position	R81.3 A12.4 F17.8 mm
Orientation	C > S-6.9 > T-0.9
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	3950.0 ms
TE	39.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	272
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	29
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	36
Distance Factor	10 %
Position	R81.3 A12.4 F17.8 mm
Orientation	C > S-6.9 > T-0.9
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R81.3 A12.4 F17.8 mm
Orientation	C > S-6.9 > T-0.9
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	R81.3 A12.4 F17.8
R	81.3 mm
Α	12.4 mm
F	17.8 mm
Initial Orientation	C > S
C > S	-6.90

> T	-0.90
Initial Rotation	-0.82 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
special saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	18 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R81.3 A12.4 F17.8 mm
Orientation	C > S-6.9 > T-0.9
Rotation	-0.82 deg
R >> L	180 mm
F >> H	180 mm
A >> P	119 mm
Reset	Off

#### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

## Physio - Signal

1st Signal/Mode	None
TR	3950.0 ms
Concatenations	1

# Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off	
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## Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	151 Hz/Px
Echo Spacing	9.74 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	11

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_sag-AAT-DRB \*

TA: 59 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	R87.1 A10.3 F22.9 mm
Orientation	S > C6.8 > T2.1
Phase Encoding Dir.	H >> F
Phase Oversampling	60 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3570.0 ms
TE	31.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	3570.0 ms
TE	31.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	288
Phase Resolution	80 %
Interpolation	On

## **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	33
Distance Factor	10 %
Position	R87.1 A10.3 F22.9 mm
Orientation	S > C6.8 > T2.1
Phase Encoding Dir.	H >> F
Phase Oversampling	60 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3570.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R87.1 A10.3 F22.9 mm
Orientation	S > C6.8 > T2.1
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	R87.1 A10.3 F22.9
R	87.1 mm
Α	10.3 mm
F	22.9 mm
Initial Orientation	S > C
S > C	6.80

> T	2.10
Initial Rotation	88.18 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation None	Ī	Special Saturation	None	
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## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R87.1 A10.3 F22.9 mm
Orientation	S > C6.8 > T2.1
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3570.0 ms
Concatenations	1

#### Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off
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# Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	181 Hz/Px
Echo Spacing	10.3 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	14

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Off
Allowed Delay	30 s

# $\label{lem:limb} $$ \Physics 2 - AAT\Lower Limb\Knee\AAT options\t1\_tse\_sag-AAT-DRB * $$$

TA: 41 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	R87.1 A10.3 F22.9 mm
Orientation	S > C6.8 > T2.1
Phase Encoding Dir.	H >> F
Phase Oversampling	60 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	441.0 ms
TE	8.30 ms
Averages	1
Concatenations	3
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	441.0 ms
TE	8.30 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	304
Phase Resolution	80 %
Interpolation	On

## **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

1
33
10 %
R87.1 A10.3 F22.9 mm
S > C6.8 > T2.1
H >> F
60 %
180 mm
100.0 %
3.0 mm
441.0 ms
Interleaved
Interleaved
3

Slice Group	1
Position	R87.1 A10.3 F22.9 mm
Orientation	S > C6.8 > T2.1
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	R87.1 A10.3 F22.9
R	87.1 mm
Α	10.3 mm
F	22.9 mm
Initial Orientation	S > C
S > C	6.80

> T	2.10
Initial Rotation	88.18 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R87.1 A10.3 F22.9 mm
Orientation	S > C6.8 > T2.1
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

#### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

4 . 6'	
1st Signal/Mode	None
TR	441.0 ms
Concatenations	3

#### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	3

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off
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## Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	201 Hz/Px
Echo Spacing	8.28 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	4
Echo Trains per Slice	29

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	800.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_tra-AAT-DRB \*

TA: 54 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R82.9 A7.6 F26.4 mm
Orientation	T > C2.3 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	4390.0 ms
TE	39.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

## **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R82.9 A7.6 F26.4 mm
Orientation	T > C2.3 > S0.8
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R82.9 A7.6 F26.4 mm
Orientation	T > C2.3 > S0.8
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	R82.9 A7.6 F26.4
R	82.9 mm
Α	7.6 mm
F	26.4 mm
Initial Orientation	T > C
T > C	2.30

> S	0.80
Initial Rotation	93.63 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	26 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R82.9 A7.6 F26.4 mm
Orientation	T > C2.3 > S0.8
Rotation	93.62 deg
R >> L	160 mm
A >> P	160 mm
F >> H	132 mm
Reset	Off

#### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	4390.0 ms
Concatenations	1

#### Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off	
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## Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	150 Hz/Px
Echo Spacing	9.68 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	10

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\localizer\_sag+cor+tra \*

TA: 18 sec Coil Selection: Auto Voxel Size: 0.6×0.6×6.0 mm³ Acc:: 2 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	All Segments
Inline Movie	Off

#### Routine

Slice Group       1         Slices       3         Distance Factor       50 %         Position       L112.0 P25.8 H0.0 mm         Orientation       S > C-2.7         Phase Encoding Dir.       A >> P         Slice Group       2         Slices       3         Distance Factor       50 %         Position       L112.0 P25.8 H0.0 mm         Orientation       S > C-2.7         Phase Encoding Dir.       A >> P         Slices       3         Distance Factor       50 %         Position       L112.0 P25.8 H0.0 mm         Orientation       S > C-2.7         Phase Encoding Dir.       A >> P         Phase Encoding Dir.       A >> P         Phase Encoding Dir.       A >> P         Phase Oversampling       100 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11	- Touring	
Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         2           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Slice Group	1
Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         2           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Slices	3
Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         2           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Distance Factor	50 %
Phase Encoding Dir.         A >> P           Slice Group         2           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Position	L112.0 P25.8 H0.0 mm
Slice Group         2           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         \$ > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         \$ > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Orientation	S > C-2.7
Slices       3         Distance Factor       50 %         Position       L112.0 P25.8 H0.0 mm         Orientation       S > C-2.7         Phase Encoding Dir.       A >> P         Slice Group       3         Slices       3         Distance Factor       50 %         Position       L112.0 P25.8 H0.0 mm         Orientation       S > C-2.7         Phase Encoding Dir.       A >> P         Phase Oversampling       100 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1	Phase Encoding Dir.	A >> P
Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Slice Group	2
Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Slices	3
Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Distance Factor	50 %
Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Position	L112.0 P25.8 H0.0 mm
Slice Group         3           Slices         3           Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         5 > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Orientation	S > C-2.7
Slices       3         Distance Factor       50 %         Position       L112.0 P25.8 H0.0 mm         Orientation       S > C-2.7         Phase Encoding Dir.       A >> P         Phase Oversampling       100 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1	Phase Encoding Dir.	A >> P
Distance Factor         50 %           Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Slice Group	3
Position         L112.0 P25.8 H0.0 mm           Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Slices	3
Orientation         S > C-2.7           Phase Encoding Dir.         A >> P           Phase Oversampling         100 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1	Distance Factor	50 %
Phase Encoding Dir.       A >> P         Phase Oversampling       100 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1	Position	L112.0 P25.8 H0.0 mm
Phase Oversampling 100 % FoV Read 300 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1	Orientation	S > C-2.7
FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1	Phase Encoding Dir.	A >> P
FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1	Phase Oversampling	100 %
Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1	FoV Read	300 mm
TR 7.0 ms TE 3.03 ms Averages 1	FoV Phase	100.0 %
TE 3.03 ms Averages 1	Slice Thickness	6.0 mm
Averages 1	TR	7.0 ms
, wordges	TE	3.03 ms
Concatenations 11	Averages	1
	Concatenations	11
AutoAlign	AutoAlign	

## **Contrast - Common**

TR	7.0 ms
TE	3.03 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard

#### **Contrast - Common**

Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	300 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

## **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

## **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

1
3
50 %
L112.0 P25.8 H0.0 mm
S > C-2.7
A >> P
2
3
50 %
L112.0 P25.8 H0.0 mm
S > C-2.7
A >> P
3
3
50 %
L112.0 P25.8 H0.0 mm

# **Geometry - Common**

Orientation	S > C-2.7
Phase Encoding Dir.	A >> P
Phase Oversampling	100 %
FoV Read	300 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	7.0 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	11

# Geometry - AutoAlign

Slice Group	1
Position	L112.0 P25.8 H0.0 mm
Orientation	S > C-2.7
Phase Encoding Dir.	A >> P
Slice Group	2
Position	L112.0 P25.8 H0.0 mm
Orientation	S > C-2.7
Phase Encoding Dir.	A >> P
Slice Group	3
Position	L112.0 P25.8 H0.0 mm
Orientation	S > C-2.7
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	L112.0 P25.8 H0.0
L	112.0 mm
Р	25.8 mm
F	0.0 mm
Initial Orientation	S > C
S > C	-2.70
> T	0.00
Initial Rotation	0.00 deg

# **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	7.0 ms
Segments	1
Concatenations	11

# Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	300 mm
FoV Phase	100.0 %
Phase Resolution	80 %

# **Physio - PACE**

Resp. Control	Off
Concatenations	11

## Inline - Liver

Liver Registration	Off
Save Original Images	On

## **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

#### Inline - MIP

MIP Sag	Off	
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# Inline - MIP

MIP Cor	Off	
MIP Tra	Off	
MIP Time	Off	
Radial MIP	Off	
Save Original Images	On	
MPR Sag	Off	
MPR Cor	Off	
MPR Tra	Off	

# Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

# Inline - Composing

Inline Composing	Off
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# Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	290 Hz/Px
Asymmetric Echo	Allowed
Segments	1

# Sequence - Part 2

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

SAR Assistant	Off	

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\t2\_tse\_tra-AAT-DRB \*

TA: 1:45 min Coil Selection: Auto Voxel Size: 0.2×0.2×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	7410.0 ms
TE	82.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	7410.0 ms
TE	82.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

#### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

#### **Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	384
Phase Resolution	70 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	36
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

CI. C	4
Slice Group	1
Slices	40
Distance Factor	10 %
Position	L108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	7410.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	L108.6 P16.7 H23.3
L	108.6 mm
P	16.7 mm
Н	23.3 mm
Initial Orientation	T > S
T > S	3.80
> C	1.40

Initial Rotation	86.20 deg

## **Geometry - Navigator**

## **Geometry - Saturation**

Special Saturation None
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# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	Н
Inline Composing	Off

# System - Miscellaneous

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	7410.0 ms
Concatenations	1

## Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	70 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

## Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	148 Hz/Px
Echo Spacing	11.8 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	13

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# $\label{lem:limb_kneelaatoptions_pd_tse_fs_cor-AAT-DRB *} \\$

TA: 1:36 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	36
Distance Factor	10 %
Position	L110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	3950.0 ms
TE	39.00 ms
МТС	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	272
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	24
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	36
Distance Factor	10 %
Position	L110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	L110.4 P11.7 H23.0
L	110.4 mm
Р	11.7 mm
Н	23.0 mm
Initial Orientation	C > S
C > S	4.00

> T	-3.60	
Initial Rotation	-0.82 deg	

# **Geometry - Navigator**

# **Geometry - Saturation**

6 116 1	N	
Special Saturation	None	

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

## System - Adjust Volume

Position	L110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Rotation	-0.82 deg
R >> L	180 mm
F >> H	180 mm
A >> P	119 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3950.0 ms
Concatenations	1

# Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

#### **Inline - Composing**

## Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	151 Hz/Px
Echo Spacing	9.74 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	22

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_sag-AAT-DRB \*

TA: 1:09 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	L108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3570.0 ms
TE	31.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	3570.0 ms
TE	31.00 ms
МТС	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	288
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	28
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	33
Distance Factor	10 %
Position	L108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3570.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	L108.3 P22.6 H16.8
L	108.3 mm
Р	22.6 mm
Н	16.8 mm
Initial Orientation	S > T
S > T	-4.10

> C	-2.70
Initial Rotation	88.18 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
Special Saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	17 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3570.0 ms
Concatenations	1

#### **Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

#### **Inline - Composing**

Inline Composing	Off	

## Sequence - Part 1

Seguence Name	tse
Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	181 Hz/Px
Echo Spacing	10.3 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	17

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Off
Allowed Delay	30 s

# $\label{lem:limb} $$ \Physics 2 - AAT\Lower Limb\Knee\AAT options\t1\_tse\_sag-AAT-DRB * $$$

TA: 49 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	L108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	441.0 ms
TE	8.30 ms
Averages	1
Concatenations	3
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	441.0 ms
TE	8.30 ms
TD	0.00 ms
МТС	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	304
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

## **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

1
33
10 %
L108.3 P22.6 H16.8 mm
S > T-4.1 > C-2.7
H >> F
100 %
180 mm
100.0 %
3.0 mm
441.0 ms
Interleaved
Interleaved
3

Slice Group	1
Position	L108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	L108.3 P22.6 H16.8
L	108.3 mm
P	22.6 mm
н	16.8 mm
Initial Orientation	S > T
S > T	-4.10

> C	-2.70
Initial Rotation	88.18 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
Special Saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	17 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1 at Cianal/Mada	None
1st Signal/Mode	None
TR	441.0 ms
Concatenations	3

#### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	3

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off
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# Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	201 Hz/Px
Echo Spacing	8.28 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	4
Echo Trains per Slice	35

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	800.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_tra-AAT-DRB \*

TA: 1:42 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	4390.0 ms
TE	39.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	L108.6 P16.7 H23.3
L	108.6 mm
P	16.7 mm
Н	23.3 mm
Initial Orientation	T > S
T > S	3.80

> C	1.40
Initial Rotation	86.20 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation None	Ī	Special Saturation	None	
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## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Rotation	86.20 deg
R >> L	160 mm
A >> P	160 mm
F >> H	132 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	4390.0 ms
Concatenations	1

#### Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

Inline Composing	Off
------------------	-----

# Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	150 Hz/Px
Echo Spacing	9.68 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	21

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# 

TA: 25 sec Coil Selection: Auto Voxel Size: 0.5×0.5×6.0 mm³ Acc:: None Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	2
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	3
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Phase Oversampling	O %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	8.3 ms
TE	3.57 ms
Averages	1
Concatenations	15
AutoAlign	

## Contrast - Common

TR	8.3 ms
TR TE TD	3.57 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard

#### **Contrast - Common**

Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

## **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	75 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	None
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

## **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	2
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	3
Slices	5
Distance Factor	100 %
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Phase Oversampling	0 %

# **Geometry - Common**

FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	8.3 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	15

# Geometry - AutoAlign

Slice Group	1
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	2
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
Slice Group	3
Position	R86.0 A30.0 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	P >> A
AutoAlign	
Initial Position	R86.0 A30.0 H0.0
R	86.0 mm
Α	30.0 mm
н	0.0 mm
Initial Orientation	Sagittal
Initial Rotation	-180.00 deg

# **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

# **System - Miscellaneous**

Coil Selection	Auto Coil Select
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >>> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
CoilShim	Off

# **System - Adjustments**

Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

15	t Signal/Mode	None
TF	3	8.3 ms
Se	gments	1
Cd	oncatenations	15

# Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	250 mm
FoV Phase	100.0 %
Phase Resolution	75 %

# **Physio - PACE**

Resp. Control	Off
Concatenations	15

## Inline - Liver

Liver Registration	Off	
Save Original Images	On	

## Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

## Inline - MIP

MIP Sag	Off	
MIP Cor	Off	
MIP Tra	Off	
MIP Time	Off	

# Inline - MIP

Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

# Inline - Composing

Inline Composing	Off
------------------	-----

# Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	250 Hz/Px
Asymmetric Echo	Allowed
Segments	1

# Sequence - Part 2

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\t2\_tse\_tra-AAT-DRB \*

TA: 1:45 min Coil Selection: Auto Voxel Size: 0.2×0.2×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	7410.0 ms
TE	82.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	7410.0 ms
TE	82.00 ms
МТС	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

## **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	160 mm
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#### **Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	384
Phase Resolution	70 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	36
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

#### **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	7410.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	R108.6 P16.7 H23.3
R	108.6 mm
Р	16.7 mm
н	23.3 mm
Initial Orientation	T > S
T > S	3.80
> C	1.40

Initial Rotation	86.20 deg

## **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
Special Saturation	None

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	Н
Inline Composing	Off

# System - Miscellaneous

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Sig	nal/Mode	None	
TR		7410.0 ms	
Concat	enations	1	

## Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	70 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

## **Inline - Composing**

# Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	148 Hz/Px
Echo Spacing	11.8 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	13

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# $\label{lem:limb_kneelaatoptions_pd_tse_fs_cor-AAT-DRB *} \\$

TA: 1:36 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	36
Distance Factor	10 %
Position	R110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	3950.0 ms
TE	39.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	272
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	24
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	36
Distance Factor	10 %
Position	R110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3950.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	R110.4 P11.7 H23.0
R	110.4 mm
Р	11.7 mm
н	23.0 mm
Initial Orientation	C > S
C > S	4.00

> T	-3.60
Initial Rotation	-0.82 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

<u> </u>	
Position	R110.4 P11.7 H23.0 mm
Orientation	C > S4.0 > T-3.6
Rotation	-0.82 deg
R >> L	180 mm
F >> H	180 mm
A >> P	119 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3950.0 ms
Concatenations	1

# Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Composing

Inline Composing	Off	
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# Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	151 Hz/Px
Echo Spacing	9.74 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	22

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_sag-AAT-DRB \*

TA: 1:09 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3570.0 ms
TE	31.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

#### **Contrast - Common**

TR	3570.0 ms
TE	31.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	288
Phase Resolution	80 %
Interpolation	On

#### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	28
Deep Resolve	On
Phase Partial Fourier	Off

## **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	33
Distance Factor	10 %
Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3570.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	R108.3 P22.6 H16.8
R	108.3 mm
Р	22.6 mm
Н	16.8 mm
Initial Orientation	S > T
S > T	-4.10

> C	-2.70
Initial Rotation	88.18 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
special saturation	None

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	17 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3570.0 ms
Concatenations	1

#### **Physio - Cardiac**

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

#### **Inline - Composing**

## Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	181 Hz/Px
Echo Spacing	10.3 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	17

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Off
Allowed Delay	30 s

# $\label{lem:limb} $$ \Physics 2 - AAT\Lower Limb\Knee\AAT options\t1\_tse\_sag-AAT-DRB * $$$

TA: 49 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

## **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	33
Distance Factor	10 %
Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	441.0 ms
TE	8.30 ms
Averages	1
Concatenations	3
AutoAlign	Knee > Standard

## **Contrast - Common**

TR	441.0 ms
TE	8.30 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	304
Phase Resolution	80 %
Interpolation	On

## **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

## **Geometry - Common**

Slice Group	1
Slices	33
Distance Factor	10 %
Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	441.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	3

Slice Group	1
Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Phase Encoding Dir.	H >> F
AutoAlign	Knee > Standard
Initial Position	R108.3 P22.6 H16.8
R	108.3 mm
Р	22.6 mm
Н	16.8 mm
Initial Orientation	S > T
S > T	-4.10

> C	-2.70
Initial Rotation	88.18 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

## **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	17 mm
Table Position	Н
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

## **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R108.3 P22.6 H16.8 mm
Orientation	S > T-4.1 > C-2.7
Rotation	88.18 deg
F >> H	180 mm
A >> P	180 mm
R >> L	109 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

## Physio - Signal

1st Signal/Mode	None
TR	441.0 ms
Concatenations	3

#### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

## **Physio - PACE**

Resp. Control	Off
Concatenations	3

#### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

#### **Inline - Composing**

## Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	201 Hz/Px
Echo Spacing	8.28 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	4
Echo Trains per Slice	35

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	800.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Knee\AAT options\pd\_tse\_fs\_tra-AAT-DRB \*

TA: 1:42 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

### **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	Knee > Standard

### **Contrast - Common**

TR	4390.0 ms
TE	39.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	180 deg
Fat-Water Contrast	Fat Saturation
Fat Saturation	Weak
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	R108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
Phase Oversampling	150 %
FoV Read	160 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	4390.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Phase Encoding Dir.	R >> L
AutoAlign	Knee > Standard
Initial Position	R108.6 P16.7 H23.3
R	108.6 mm
P	16.7 mm
н	23.3 mm
Initial Orientation	T > S
T > S	3.80

> C	1.40
Initial Rotation	86.20 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation None	Ī	Special Saturation	None	
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### **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	23 mm
Table Position	Н
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >>> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R108.6 P16.7 H23.3 mm
Orientation	T > S3.8 > C1.4
Rotation	86.20 deg
R >> L	160 mm
A >> P	160 mm
F >> H	132 mm
Reset	Off

### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

### Physio - Signal

1st Signal/Mode	None
TR	4390.0 ms
Concatenations	1

### Physio - Cardiac

Fat-Water Contrast	Fat Saturation
Magn. Preparation	None
Dark Blood	Off
FoV Read	160 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	1

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

Inline Composing	Off
------------------	-----

## Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	150 Hz/Px
Echo Spacing	9.68 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	7
Echo Trains per Slice	21

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Ankle\AAT options\localizer\_tra \*

TA: 6 sec Coil Selection: Auto Voxel Size: 0.8×0.8×6.0 mm³ Acc:: 2 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	Off
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	5
Distance Factor	100 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	400 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	7.0 ms
TE	3.03 ms
Averages	1
Concatenations	5
AutoAlign	

### **Contrast - Common**

TR	7.0 ms
TE	3.03 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

### **Resolution - Common**

FoV Read	400 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

Slice Group	1
Slices	5
Distance Factor	100 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	400 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	7.0 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	5

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
Н	0.0 mm
Initial Orientation	Transversal
Initial Rotation	0.00 deg

# **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

## Physio - Signal

1st Signal/Mode	None
TR	7.0 ms
Segments	1
Concatenations	5

## Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None

# Physio - Cardiac

Dark Blood	Off
FoV Read	400 mm
FoV Phase	100.0 %
Phase Resolution	80 %

### **Physio - PACE**

Resp. Control	Off
Concatenations	5

### Inline - Liver

Liver Registration	Off
Save Original Images	On

### **Inline - Subtraction**

Subtract	Off	
Measurements	1	
StdDev	Off	
Save Original Images	On	

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

# Inline - Composing

Inline Composing Off	Inline Composing	Off
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### Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	290 Hz/Px
Asymmetric Echo	Allowed
Segments	1

Introduction	On	
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# Sequence - Part 2

RF Spoiling	On
Acoustic noise reduction	Off

SAR Assistant	Off

# \\MR Physics 2 - AAT\Lower Limb\Ankle\AAT options\localizer\_sag+cor+tra \*

TA: 10 sec Coil Selection: Auto Voxel Size: 0.6×0.6×6.0 mm³ Acc:: 2 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group       1         Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       S > C-17.2         Phase Encoding Dir.       A >> P         Slice Group       2         Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       S > C-17.2         Phase Encoding Dir.       A >> P         Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       S > C-17.2         Phase Encoding Dir.       A >> P         Phase Oversampling       0 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11         AutoAlign	Routine	
Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Slice Group         2           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Slice Group	1
Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Slice Group         2           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Slices	3
Orientation         \$ > C-17.2           Phase Encoding Dir.         \$ > P           Slice Group         2           Slices         3           Distance Factor         50 %           Position         \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Distance Factor	50 %
Phase Encoding Dir.  Slice Group  Slices  Distance Factor  Position  Orientation  S > C-17.2  Phase Encoding Dir.  A >> P  Slice Group  3  Slices  Distance Factor  Position  L30.4 P2.2 H0.0 mm  A >> P  Slice Group  3  Slices  Distance Factor  Position  Orientation  Orientation  S > C-17.2  Phase Encoding Dir.  A >> P  Phase Oversampling  FoV Read  FoV Phase  Slice Thickness  TR  7.0 ms  TE  3.03 ms  Averages  1  Concatenations  11	Position	L30.4 P2.2 H0.0 mm
Slice Group       2         Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       5 > C-17.2         Phase Encoding Dir.       A >> P         Slice Group       3         Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       5 > C-17.2         Phase Encoding Dir.       A >> P         Phase Oversampling       0 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11	Orientation	S > C-17.2
Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       S > C-17.2         Phase Encoding Dir.       A >> P         Slice Group       3         Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       S > C-17.2         Phase Encoding Dir.       A >> P         Phase Oversampling       0 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11	Phase Encoding Dir.	A >> P
Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Slice Group	2
Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Slices	3
Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Distance Factor	50 %
Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         5 > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Position	L30.4 P2.2 H0.0 mm
Slice Group         3           Slices         3           Distance Factor         50 %           Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Orientation	S > C-17.2
Slices       3         Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       S > C-17.2         Phase Encoding Dir.       A >> P         Phase Oversampling       0 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11	Phase Encoding Dir.	A >> P
Distance Factor       50 %         Position       L30.4 P2.2 H0.0 mm         Orientation       S > C-17.2         Phase Encoding Dir.       A >> P         Phase Oversampling       0 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11	Slice Group	3
Position         L30.4 P2.2 H0.0 mm           Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Slices	3
Orientation         S > C-17.2           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Distance Factor	50 %
Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Position	L30.4 P2.2 H0.0 mm
Phase Oversampling 0 % FoV Read 300 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	Orientation	S > C-17.2
FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11	Phase Encoding Dir.	A >> P
FoV Phase 100.0 %  Slice Thickness 6.0 mm  TR 7.0 ms  TE 3.03 ms  Averages 1  Concatenations 11	Phase Oversampling	0 %
Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	FoV Read	300 mm
TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	FoV Phase	100.0 %
TE 3.03 ms Averages 1 Concatenations 11	Slice Thickness	6.0 mm
Averages 1 Concatenations 11	TR	7.0 ms
Concatenations 11	TE	3.03 ms
	Averages	1
AutoAlign	Concatenations	11
<u> </u>	AutoAlign	

### Contrast - Common

TR TE TD	7.0 ms
TE	3.03 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard

#### **Contrast - Common**

Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

# **Resolution - Common**

FoV Read	300 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	3
Distance Factor	50 %
Position	L30.4 P2.2 H0.0 mm
Orientation	S > C-17.2
Phase Encoding Dir.	A >> P
Slice Group	2
Slices	3
Distance Factor	50 %
Position	L30.4 P2.2 H0.0 mm
Orientation	S > C-17.2
Phase Encoding Dir.	A >> P
Slice Group	3
Slices	3
Distance Factor	50 %
Position	L30.4 P2.2 H0.0 mm

# **Geometry - Common**

Orientation	S > C-17.2
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	300 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	7.0 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	11

### Geometry - AutoAlign

Slice Group	1
Position	L30.4 P2.2 H0.0 mm
Orientation	S > C-17.2
Phase Encoding Dir.	A >> P
Slice Group	2
Position	L30.4 P2.2 H0.0 mm
Orientation	S > C-17.2
Phase Encoding Dir.	A >> P
Slice Group	3
Position	L30.4 P2.2 H0.0 mm
Orientation	S > C-17.2
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	L30.4 P2.2 H0.0
L	30.4 mm
Р	2.2 mm
н	0.0 mm
Initial Orientation	S > C
S > C	-17.20
> T	0.00
Initial Rotation	0.00 deg

# **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

# **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	Med >> Lat
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	7.0 ms
Segments	1
Concatenations	11

# Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	300 mm
FoV Phase	100.0 %
Phase Resolution	80 %

# **Physio - PACE**

Resp. Control	Off
Concatenations	11

### Inline - Liver

Liver Registration	Off
Save Original Images	On

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

#### Inline - MIP

MIP Sag	J	Off
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# Inline - MIP

MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

# Inline - Composing

Inline Composing	Off
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# Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	290 Hz/Px
Asymmetric Echo	Allowed
Segments	1

# Sequence - Part 2

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

SAR Assistant	Off	

# $\label{lem:limblanklelaat options lagrange} $$ \MR Physics 2 - AAT\Lower Limb\Ankle\AAT options \t1_tse_sag-AAT-DRB *$$

TA: 39 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

### **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	24
Distance Factor	10 %
Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Phase Encoding Dir.	A >> P
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	434.0 ms
TE	9.60 ms
Averages	1
Concatenations	2
AutoAlign	

### **Contrast - Common**

TR	434.0 ms
TE	9.60 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	304
Phase Resolution	70 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

F.,	
Slice Group	1
Slices	24
Distance Factor	10 %
Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Phase Encoding Dir.	A >> P
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	434.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	2

Slice Group	1
Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	R47.1 P4.1 F4.7
R	47.1 mm
Р	4.1 mm
F	4.7 mm
Initial Orientation	S > C
S > C	18.70

> T	-6.70	
Initial Rotation	-1.59 deg	

# **Geometry - Navigator**

# **Geometry - Saturation**

6 116 1	N	
Special Saturation	None	

### **Geometry - Tim Planning Suite**

Set-n-Go Prot	cocol	Off
Table Position	า	5 mm
Table Position	า	F
Inline Compo	sing	Off

### **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Rotation	-1.59 deg
A >> P	180 mm
F >> H	180 mm
R >> L	79 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	434.0 ms
Concatenations	2

### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	70 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	2

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

Inline Composing	Off
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# Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	201 Hz/Px
Echo Spacing	9.56 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	42

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	800.0 ms
Allowed Delay	30 s

# $\label{lem:lemblankle} $$ \MR Physics 2 - AAT\Lower Limb\Ankle\AAT options\\ t2\_tse\_stir\_sag-AAT-DRB * $$$

TA: 1:09 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	24
Distance Factor	10 %
Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Phase Encoding Dir.	A >> P
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3200.0 ms
TE	39.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	3200.0 ms
TE	39.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
ΤΙ	160 ms
Freeze Suppr. Tissue	Off
Flip Angle	148 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	352
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	24
Distance Factor	10 %
Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Phase Encoding Dir.	A >> P
Phase Oversampling	100 %
FoV Read	180 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3200.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	R47.1 P4.1 F4.7
R	47.1 mm
Р	4.1 mm
F	4.7 mm
Initial Orientation	S > C
S > C	18.70

> T	-6.70
Initial Rotation	-1.59 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	5 mm
Table Position	F
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Foot/Ankle
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R47.1 P4.1 F4.7 mm
Orientation	S > C18.7 > T-6.7
Rotation	-1.59 deg
A >> P	180 mm
F >> H	180 mm
R >> L	79 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3200.0 ms
Concatenations	1

# Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	Slice-sel. IR
TI	160 ms
Dark Blood	Off
FoV Read	180 mm
FoV Phase	100.0 %
Phase Resolution	80 %
Motion Correction	None

### **Physio - PACE**

Resp. Control	Off
Concatenations	1

### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

# Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Composing

Inline Composing	Off
------------------	-----

# Sequence - Part 1

Sequence Name	tir
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	200 Hz/Px
Echo Spacing	9.82 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	20

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

# Sequence - Part 2

Acoustic noise reduction	Off
Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Ankle\AAT options\t2\_tse\_tra-AAT-DRB \*

TA: 1:03 min Coil Selection: Auto Voxel Size: 0.2×0.2×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	45
Distance Factor	10 %
Position	R40.4 P5.2 F11.8 mm
Orientation	T > S3.9 > C-1.5
Phase Encoding Dir.	L >> R
Phase Oversampling	30 %
FoV Read	140 mm
FoV Phase	83.3 %
Slice Thickness	3.0 mm
TR	7660.0 ms
TE	95.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	7660.0 ms
TE	95.00 ms
МТС	Off
Magn. Preparation	None
Flip Angle	148 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

### **Resolution - Common**

0 mm

#### **Resolution - Common**

FoV Phase	83.3 %
Slice Thickness	3.0 mm
Base Resolution	336
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	43
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	45
Distance Factor	10 %
Position	R40.4 P5.2 F11.8 mm
Orientation	T > S3.9 > C-1.5
Phase Encoding Dir.	L>> R
Phase Oversampling	30 %
FoV Read	140 mm
FoV Phase	83.3 %
Slice Thickness	3.0 mm
TR	7660.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

deometry AutoAngn	
Slice Group	1
Position	R40.4 P5.2 F11.8 mm
Orientation	T > S3.9 > C-1.5
Phase Encoding Dir.	L>> R
AutoAlign	
Initial Position	R40.4 P5.2 F11.8
R	40.4 mm
P	5.2 mm
F	11.8 mm
Initial Orientation	T > S
T > S	3.90
> C	-1.50

Initial Rotation	-78.15 deg

## **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	12 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R40.4 P5.2 F11.8 mm
Orientation	T > S3.9 > C-1.5
Rotation	-78.15 deg
R >> L	117 mm
A >> P F >> H	140 mm
F >> H	149 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	7660.0 ms
Concatenations	1

### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	140 mm
FoV Phase	83.3 %
Phase Resolution	80 %
Motion Correction	None

### **Physio - PACE**

Resp. Control	Off
Concatenations	1

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

Inline Composing Off
----------------------

### Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	207 Hz/Px
Echo Spacing	10.5 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	15
Echo Trains per Slice	7

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# $\label{lem:lemblankle} $$ \MR Physics 2 - AAT\Lower Limb\Ankle\AAT options\\ t2\_tse\_stir\_cor-AAT-DRB * $$$

TA: 1:01 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 3 Rel. SNR: 1.00

### **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	36
Distance Factor	10 %
Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Phase Encoding Dir.	R >> L
Phase Oversampling	50 %
FoV Read	180 mm
FoV Phase	73.6 %
Slice Thickness	3.0 mm
TR	4590.0 ms
TE	38.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	4590.0 ms
TE	38.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
ті	160 ms
Freeze Suppr. Tissue	Off
Flip Angle	148 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Each Measurement

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	73.6 %
Slice Thickness	3.0 mm
Base Resolution	288
Phase Resolution	75 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	26
Deep Resolve	On
Phase Partial Fourier	Off

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

Slice Group	1
Slices	36
Distance Factor	10 %
Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Phase Encoding Dir.	R >> L
Phase Oversampling	50 %
FoV Read	180 mm
FoV Phase	73.6 %
Slice Thickness	3.0 mm
TR	4590.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Phase Encoding Dir.	R >> L
AutoAlign	
Initial Position	R44.1 P6.1 F3.1
R	44.1 mm
Р	6.1 mm
F	3.1 mm
Initial Orientation	C > S
C > S	-17.20

> T	-2.50
Initial Rotation	3.55 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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### **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	3 mm
Table Position	F
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS Restricted
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Foot/Ankle
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Rotation	3.55 deg
R >> L	133 mm
F >> H	180 mm
A >> P	119 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	4590.0 ms
Concatenations	1

### **Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Slice-sel. IR
ті	160 ms
Dark Blood	Off
FoV Read	180 mm
FoV Phase	73.6 %
Phase Resolution	75 %
Motion Correction	None

### **Physio - PACE**

Resp. Control	Off
Concatenations	1

### Inline - Subtraction

Subtract		Off
Measuremen	ts	1
StdDev		Off
Motion Corre	ection	None
Save Original	l Images	On

#### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

Inline Composing	Off
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### Sequence - Part 1

Sequence Name	tir
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	200 Hz/Px
Echo Spacing	9.50 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	12

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

# Sequence - Part 2

Acoustic noise reduction	Off
Reduce Motion Sens.	On
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	120 deg
Max. TR	6000.0 ms
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Ankle\AAT options\pd\_tse\_cor-AAT-DRB \*

TA: 32 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 4 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	Off
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	36
Distance Factor	10 %
Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	62.5 %
Slice Thickness	3.0 mm
TR	3370.0 ms
TE	29.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	3370.0 ms
TE	29.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	150 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

### **Resolution - Common**

FoV Read	180 mm

### **Resolution - Common**

FoV Phase	62.5 %
Slice Thickness	3.0 mm
Base Resolution	336
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	4
Reference Lines PE	29
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Off
Image Filter	Off

### **Geometry - Common**

CII C	4
Slice Group	1
Slices	36
Distance Factor	10 %
Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	180 mm
FoV Phase	62.5 %
Slice Thickness	3.0 mm
TR	3370.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Phase Encoding Dir.	R >> L
AutoAlign	
Initial Position	R44.1 P6.1 F3.1
R	44.1 mm
P	6.1 mm
F	3.1 mm
Initial Orientation	C > S
C > S	-17.20
> T	-2.50

Initial Rotation	3.55 deg
-	

### **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation None
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# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	3 mm
Table Position	F
Inline Composing	Off

# System - Miscellaneous

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Standard
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	R44.1 P6.1 F3.1 mm
Orientation	C > S-17.2 > T-2.5
Rotation	3.55 deg
R >> L	113 mm
F >> H	180 mm
A >> P	119 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	3370.0 ms
Concatenations	1

### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	180 mm
FoV Phase	62.5 %
Phase Resolution	80 %
Motion Correction	None

### **Physio - PACE**

Resp. Control	Off
Concatenations	1

### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

### Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Normal
Flow Compensation	None
Bandwidth	210 Hz/Px
Echo Spacing	9.78 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	8

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Off
Allowed Delay	30 s

# \\MR Physics 2 - AAT\Lower Limb\Foot\AAT options\localizer\_tra \*

TA: 6 sec Coil Selection: Auto Voxel Size: 0.8×0.8×6.0 mm<sup>3</sup> Acc:: 2 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	Off
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group         1           Slices         5           Distance Factor         100 %           Position         Isocenter           Orientation         Transversal           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         400 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         5           AutoAlign		
Distance Factor 100 % Position Isocenter Orientation Transversal Phase Encoding Dir. A >> P  Phase Oversampling 0 % FoV Read 400 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 5	Slice Group	1
Position Isocenter Orientation Transversal Phase Encoding Dir. A >> P  Phase Oversampling 0 % FoV Read 400 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 5	Slices	5
Orientation         Transversal           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         400 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         5	Distance Factor	100 %
Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         400 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         5	Position	Isocenter
Phase Oversampling 0 % FoV Read 400 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 5	Orientation	Transversal
FoV Read 400 mm  FoV Phase 100.0 %  Slice Thickness 6.0 mm  TR 7.0 ms  TE 3.03 ms  Averages 1  Concatenations 5	Phase Encoding Dir.	A >> P
FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 5	Phase Oversampling	0 %
Slice Thickness 6.0 mm  TR 7.0 ms  TE 3.03 ms  Averages 1  Concatenations 5	FoV Read	400 mm
TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 5	FoV Phase	100.0 %
TE 3.03 ms Averages 1 Concatenations 5	Slice Thickness	6.0 mm
Averages 1 Concatenations 5	TR	7.0 ms
Concatenations 5	TE	3.03 ms
	Averages	1
AutoAlign	Concatenations	5
	AutoAlign	

### **Contrast - Common**

TR	7.0 ms
TE	3.03 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	20 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	400 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	5
Distance Factor	100 %
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	400 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	7.0 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	5

Slice Group	1
Position	Isocenter
Orientation	Transversal
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	Isocenter
L	0.0 mm
Р	0.0 mm
н	0.0 mm
Initial Orientation	Transversal
Initial Rotation	0.00 deg

# **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >>> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

### System - Tx/Rx

.679887 MHz
000 V
f
000
000

### Physio - Signal

1st Signal/Mode	None
TR	7.0 ms
Segments	1
Concatenations	5

### Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None

# Physio - Cardiac

Dark Blood	Off
FoV Read	400 mm
FoV Phase	100.0 %
Phase Resolution	80 %

### **Physio - PACE**

Resp. Control	Off
Concatenations	5

#### Inline - Liver

Liver Registration	Off	
Save Original Images	On	

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

#### Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

### **Inline - Composing**

		Inline Composing	Off
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## Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	290 Hz/Px
Asymmetric Echo	Allowed
Segments	1

Introduction	On	
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# Sequence - Part 2

RF Spoiling	On
Acoustic noise reduction	Off

SAR Assistant	Off	

# \\MR Physics 2 - AAT\Lower Limb\Foot\AAT options\localizer\_sag+cor+tra \*

TA: 10 sec Coil Selection: Auto Voxel Size: 0.6×0.6×6.0 mm³ Acc:: 2 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	All Segments
Inline Movie	Off

#### Routine

Slices       3         Distance Factor       50 %         Position       L32.5 A68.7 H0.0 mm         Orientation       Sagittal         Phase Encoding Dir.       A >> P         Slice Group       2         Slices       3         Distance Factor       50 %         Position       L32.5 A68.7 H0.0 mm         Orientation       Sagittal         Phase Encoding Dir.       A >> P         Slices       3         Distance Factor       50 %         Position       L32.5 A68.7 H0.0 mm         Orientation       Sagittal         Phase Encoding Dir.       A >> P         Phase Oversampling       0 %         FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11         AutoAlign	Noutifie		
Distance Factor Position Crientation Sagittal Phase Encoding Dir.  Slice Group  Slices Distance Factor Position Orientation Sagittal  A >> P  Slices  Distance Factor Position Crientation Sagittal Phase Encoding Dir.  A >> P  Slice Group  Slices  Jistance Factor Phase Encoding Dir.  Sagittal Phase Encoding Dir.  Slices Jistance Factor Position Crientation Sagittal Phase Encoding Dir.  A >> P  Slices Jistance Factor Position Crientation Sagittal Phase Encoding Dir.  A >> P  Slices A >> P  Slice Group Sagittal Phase Encoding Dir. A >> P  Sagittal Phase Distance Factor Sagittal Phase Encoding Dir. A >> P  Sagittal Phase Oversampling O % FoV Read Slice Thickness FoV Phase Slice Thickness For Mase Slice Thickness Slice Thickness TR To ms TE Slice Sagittal	Slice Group	1	
Position Orientation Sagittal Phase Encoding Dir.  Slices Slices Sistance Factor Position Orientation Sagittal Phase Encoding Dir.  Sagittal Phase Encoding Dir.  Sagittal Phase Encoding Dir.  Sagittal Phase Encoding Dir.  Slices Sistance Factor Position Orientation Sagittal Phase Encoding Dir.  Slices Sistance Factor Sow Position Crientation Sagittal Phase Encoding Dir.  A >> P  Phase Oversampling Ow FoV Read Slice Thickness FoV Phase Slice Thickness TR Toms TE Sagittal Toms Toms TE Sagittal Toms Toms TE Sagittal Toms Toms TE Sagittal Toms Toms TE Toms Toms TE Toms Toms TI	Slices	3	
Orientation Phase Encoding Dir.  Slice Group  Slices  Distance Factor Position Orientation Phase Encoding Dir.  Sagittal Phase Encoding Dir.  A >> P  Slice Group  Orientation Sagittal Phase Encoding Dir.  A >> P  Slices  Distance Factor Position Orientation Sagittal Phase Encoding Dir.  A >> P  Slices  Distance Factor Position Orientation Sagittal Phase Encoding Dir.  A >> P  Phase Oversampling O %  FoV Read 300 mm  FoV Phase 100.0 %  Slice Thickness 6.0 mm  TR 7.0 ms  TE 3.03 ms  Averages 1 Concatenations	Distance Factor	50 %	
Phase Encoding Dir.  Slice Group  Slices  Distance Factor  Position  Orientation  Phase Encoding Dir.  Slice Group  Slice Group  Slices  Distance Factor  Phase Encoding Dir.  A >> P  Slice Group  Slices  Distance Factor  Position  Orientation  Sagittal  Phase Encoding Dir.  A >> P  Slices  Distance Factor  Position  Orientation  Sagittal  Phase Encoding Dir.  A >> P  Phase Oversampling  O %  FoV Read  Slice Thickness  G.0 mm  TR  7.0 ms  TE  3.03 ms  Averages  1  Concatenations  11	Position	L32.5 A68.7 H0.0 mm	
Slice Group         2           Slices         3           Distance Factor         50 %           Position         L32.5 A68.7 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         A >> P           Slice Group         3           Slices         3           Distance Factor         50 %           Position         L32.5 A68.7 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Orientation	Sagittal	
Slices  Distance Factor  Position  Orientation  Sagittal  Phase Encoding Dir.  Slices  Distance Factor  Position  Sagittal  Phase Encoding Dir.  Slices  Distance Factor  Position  Orientation  Orientation  Sagittal  Phase Encoding Dir.  A >> P  Phase Oversampling  FoV Read  Slice Thickness  TR  7.0 ms  TE  3.03 ms  Averages  1  Concatenations  132.5 A68.7 H0.0 mm  Sagittal  A >> P  Phase Oversampling  O %  6.0 mm  7.0 ms  TE  3.03 ms	Phase Encoding Dir.	A >> P	
Distance Factor Position Crientation Sagittal Phase Encoding Dir.  Slice Group  Slices Distance Factor Position Orientation Sagittal Phase Encoding Dir.  Slices Distance Factor Position Crientation Sagittal Phase Encoding Dir.  A >> P  Phase Oversampling O % FoV Read Slice Thickness TR To ms TE  3.03 ms Averages 1 Concatenations Sagittal Phase Doursampling O % Slice Thickness TR To ms TE To ms TE To ms TI To ms TI To ms TI Ti To ms TI	Slice Group	2	
Position Orientation Sagittal Phase Encoding Dir. Slices Slices Distance Factor Position Orientation Sagittal Phase Encoding Dir. A >> P  Slices 3 Distance Factor So % Position Orientation Sagittal Phase Encoding Dir. A >> P  Phase Oversampling O % FoV Read 300 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	Slices	3	
Orientation Phase Encoding Dir.  Slice Group  Slices  Distance Factor Position Orientation Sagittal Phase Encoding Dir.  A >> P  Slices  Distance Factor Position A >> P  Phase Encoding Dir.  A >> P  Phase Oversampling O %  FoV Read 300 mm  FoV Phase 100.0 %  Slice Thickness A >> 0 mm  TR 7.0 ms  TE 3.03 ms  Averages 1  Concatenations 11	Distance Factor	50 %	
Phase Encoding Dir.  Slice Group  Slices  Distance Factor  Position  Orientation  Phase Encoding Dir.  Phase Encoding Dir.  A >> P  Phase Oversampling  FoV Read  FoV Phase  Slice Thickness  TR  7.0 ms  TE  3.03 ms  Averages  1  Concatenations  A >> P	Position	L32.5 A68.7 H0.0 mm	
Slice Group         3           Slices         3           Distance Factor         50 %           Position         L32.5 A68.7 H0.0 mm           Orientation         Sagittal           Phase Encoding Dir.         A >> P           Phase Oversampling         0 %           FoV Read         300 mm           FoV Phase         100.0 %           Slice Thickness         6.0 mm           TR         7.0 ms           TE         3.03 ms           Averages         1           Concatenations         11	Orientation	Sagittal	
Slices 3 Distance Factor 50 % Position L32.5 A68.7 H0.0 mm Orientation Sagittal Phase Encoding Dir. A >> P  Phase Oversampling 0 % FoV Read 300 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	Phase Encoding Dir.	A >> P	
Distance Factor Position Orientation Sagittal Phase Encoding Dir.  Phase Oversampling FoV Read FoV Phase Slice Thickness TR TR T.0 ms TE Averages 100.0 % 11	Slice Group	3	
Position Orientation Sagittal Phase Encoding Dir.  Phase Oversampling FoV Read FoV Phase 100.0 % Slice Thickness TR 7.0 ms TE 3.03 ms Averages 100.0 cm 11	Slices	3	
Orientation Phase Encoding Dir.  Phase Oversampling  FoV Read  FoV Phase  Slice Thickness  TR  7.0 ms  TE  3.03 ms  Averages  1  Concatenations  Sagittal  A >> P  Phase Sagittal  B Sagittal  A >> P  Phase Sagittal  B Sagittal  A >> P  Phase Sagittal  B Sagit	Distance Factor	50 %	
Phase Encoding Dir.  A >> P  Phase Oversampling  FoV Read  FoV Phase  100.0 %  Slice Thickness  TR  7.0 ms  TE  3.03 ms  Averages  1  Concatenations  11	Position	L32.5 A68.7 H0.0 mm	
Phase Oversampling 0 % FoV Read 300 mm FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	Orientation	Sagittal	
FoV Read       300 mm         FoV Phase       100.0 %         Slice Thickness       6.0 mm         TR       7.0 ms         TE       3.03 ms         Averages       1         Concatenations       11	Phase Encoding Dir.	A >> P	
FoV Phase 100.0 % Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	Phase Oversampling	0 %	
Slice Thickness 6.0 mm TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	FoV Read	300 mm	
TR 7.0 ms TE 3.03 ms Averages 1 Concatenations 11	FoV Phase	100.0 %	
TE 3.03 ms Averages 1 Concatenations 11	Slice Thickness	6.0 mm	
Averages 1 Concatenations 11	TR	7.0 ms	
Concatenations 11	TE	3.03 ms	
	Averages	1	
AutoAlign	Concatenations	11	
	AutoAlign		

### Contrast - Common

TI	R	7.0 ms
TI	E	3.03 ms
TI TI	D	0.00 ms
Μ	1TC	Off
Μ	lagn. Preparation	None
FI	lip Angle	20 deg
Fá	at-Water Contrast	Standard

#### **Contrast - Common**

Dark Blood	Off
Contrasts	1
SWI	Off
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

### **Resolution - Common**

FoV Read	300 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
Base Resolution	256
Phase Resolution	80 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	2
Reference Lines PE	24
Phase Partial Fourier	Off
Asymmetric Echo	Allowed

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	On
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	3
Distance Factor	50 %
Position	L32.5 A68.7 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slice Group	2
Slices	3
Distance Factor	50 %
Position	L32.5 A68.7 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slice Group	3
Slices	3
Distance Factor	50 %
Position	L32.5 A68.7 H0.0 mm

### **Geometry - Common**

Orientation	Sagittal
Phase Encoding Dir.	A >> P
Phase Oversampling	0 %
FoV Read	300 mm
FoV Phase	100.0 %
Slice Thickness	6.0 mm
TR	7.0 ms
Multi-Slice Mode	Sequential
Series	Interleaved
Concatenations	11

# Geometry - AutoAlign

Slice Group	1
Position	L32.5 A68.7 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slice Group	2
Position	L32.5 A68.7 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
Slice Group	3
Position	L32.5 A68.7 H0.0 mm
Orientation	Sagittal
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	L32.5 A68.7 H0.0
L	32.5 mm
Α	68.7 mm
Н	0.0 mm
Initial Orientation	Sagittal
Initial Rotation	0.00 deg

### **Geometry - Saturation**

Saturation Mode	Standard
Special Saturation	None

### **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	0 mm
Table Position	Н
Inline Composing	Off

# **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

### **System - Adjust Volume**

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	7.0 ms
Segments	1
Concatenations	11

# Physio - Cardiac

Tagging	None
Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	300 mm
FoV Phase	100.0 %
Phase Resolution	80 %

# **Physio - PACE**

Resp. Control	Off
Concatenations	11

### Inline - Liver

Liver Registration	Off	
Save Original Images	On	

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Save Original Images	On

#### Inline - MIP

ĺ	MIP Sag	Off

# Inline - MIP

MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Soft Tissue

Wash-in	Off
Wash-out	Off
TTP	Off
PEI	Off
MIP Time	Off
Measurements	1

# Inline - Composing

# Sequence - Part 1

Sequence Name	fl
Dimension	2D
Excitation	Slice-sel.
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	290 Hz/Px
Asymmetric Echo	Allowed
Segments	1

# Sequence - Part 2

Introduction	On
RF Spoiling	On
Acoustic noise reduction	Off

SAR Assistant	Off	

# \\MR Physics 2 - AAT\Lower Limb\Foot\AAT options\t2\_tse\_stir\_cor-AAT-DRB \*

TA: 1:17 min Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 3 Rel. SNR: 1.00

### **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	30
Distance Factor	10 %
Position	L45.8 A86.3 F64.6 mm
Orientation	T > C21.4 > S-13.8
Phase Encoding Dir.	A >> P
Phase Oversampling	50 %
FoV Read	180 mm
FoV Phase	122.1 %
Slice Thickness	3.0 mm
TR	4500.0 ms
TE	24.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	4500.0 ms
TE	24.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
ті	160 ms
Freeze Suppr. Tissue	Off
Flip Angle	148 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	180 mm
FoV Phase	122.1 %
Slice Thickness	3.0 mm
Base Resolution	272
Phase Resolution	65 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	TSE/Separate
Acceleration Factor PE	3
Reference Lines PE	64
Deep Resolve	On
Phase Partial Fourier	Off

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	10 %
Position	L45.8 A86.3 F64.6 mm
Orientation	T > C21.4 > S-13.8
Phase Encoding Dir.	A >> P
Phase Oversampling	50 %
FoV Read	180 mm
FoV Phase	122.1 %
Slice Thickness	3.0 mm
TR	4500.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L45.8 A86.3 F64.6 mm
Orientation	T > C21.4 > S-13.8
Phase Encoding Dir.	A >> P
AutoAlign	
Initial Position	L45.8 A86.3 F64.6
L	45.8 mm
Α	86.3 mm
F	64.6 mm
Initial Orientation	T > C
T > C	21.40

> S	-13.80
Initial Rotation	0.00 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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### **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	65 mm
Table Position	F
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Foot/Ankle
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L45.8 A86.3 F64.6 mm
Orientation	T > C21.4 > S-13.8
Rotation	90.00 deg
R >> L	180 mm
A >> P	220 mm
F >> H	99 mm
Reset	Off

### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	4500.0 ms
Concatenations	1

### **Physio - Cardiac**

Fat-Water Contrast	Standard
Magn. Preparation	Slice-sel. IR
TI	160 ms
Dark Blood	Off
FoV Read	180 mm
FoV Phase	122.1 %
Phase Resolution	65 %
Motion Correction	None

# Physio - PACE

Resp. Control	Off
Concatenations	1

### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

Inline Composing	Off	
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### Sequence - Part 1

Sequence Name	tirR
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	198 Hz/Px
Echo Spacing	8.16 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	14

Introduction	On	
Phase Correction	Off	
Compensate T2 Decay	Off	
Fast Mode	Off	
WARP	Off	
Red. EC Sensitivity	Off	

# Sequence - Part 2

Acoustic noise reduction	Off
Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	6000.0 ms
Allowed Delay	0 s

# \\MR Physics 2 - AAT\Lower Limb\Foot\AAT options\t2\_tse\_stir\_tra-AAT-DRB \*

TA: 1:04 min Coil Selection: Auto Voxel Size: 0.3×0.3×4.0 mm³ Acc:: 3 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	25 %
FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	4830.0 ms
TE	24.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	4830.0 ms
TE	24.00 ms
MTC	Off
Magn. Preparation	Slice-sel. IR
ΤΙ	160 ms
Freeze Suppr. Tissue	Off
Flip Angle	130 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
Base Resolution	256
Phase Resolution	70 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	32
Deep Resolve	On
Phase Partial Fourier	Off

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	25 %
FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	4830.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
AutoAlign	
Initial Position	L43.7 A100.6 F73.7
L	43.7 mm
Α	100.6 mm
F	73.7 mm
Initial Orientation	C > T
C > T	-24.50

> S	0.10
Initial Rotation	-0.63 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
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### **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	74 mm
Table Position	F
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
B0 Shim	Foot/Ankle
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Rotation	-0.63 deg
R >> L	130 mm
F >> H	130 mm
A >> P	176 mm
Reset	Off

### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	4830.0 ms
Concatenations	1

### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	Slice-sel. IR
ті	160 ms
Dark Blood	Off
FoV Read	130 mm
FoV Phase	100.0 %
Phase Resolution	70 %
Motion Correction	None

### **Physio - PACE**

Resp. Control	Off
Concatenations	1

#### Inline - Subtraction

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

Inline Composing Off	f
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### Sequence - Part 1

Sequence Name	tir
Dimension	2D
RF Pulse Type	Fast
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	197 Hz/Px
Echo Spacing	8.10 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	8
Echo Trains per Slice	12

Introduction	On
Phase Correction	Automatic
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off

# Sequence - Part 2

Acoustic noise reduction	Off
Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	6000.0 ms
Allowed Delay	0 s

# \\MR Physics 2 - AAT\Lower Limb\Foot\AAT options\t2\_tse\_tra-AAT-DRB \*

TA: 48 sec Coil Selection: Auto Voxel Size: 0.2×0.2×4.0 mm³ Acc:: 3 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	5870.0 ms
TE	79.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	5870.0 ms
TE	79.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	135 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	Restore
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

### **Resolution - Common**

#### **Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	4.0 mm
Base Resolution	288
Phase Resolution	75 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	28
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	5870.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
AutoAlign	
Initial Position	L43.7 A100.6 F73.7
L	43.7 mm
A	100.6 mm
F	73.7 mm
Initial Orientation	C > T
C > T	-24.50
> S	0.10

Initial Rotation	-0.63 deg

## **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation None
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# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	74 mm
Table Position	F
Inline Composing	Off

# System - Miscellaneous

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

# System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# **Physio - Signal**

1st Signal/Mode	None
TR	5870.0 ms
Concatenations	1

### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	130 mm
FoV Phase	100.0 %
Phase Resolution	75 %
Motion Correction	None

### **Physio - PACE**

Resp. Control	Off
Concatenations	1

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

# Inline - Composing

Inline Composing	Off
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## Sequence - Part 1

Sequence Name	tseR
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	220 Hz/Px
Echo Spacing	9.82 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	13
Echo Trains per Slice	7

Introduction	On	
Phase Correction	Off	
Compensate T2 Decay	Off	
Fast Mode	Off	
WARP	Off	
Red. EC Sensitivity	Off	
Acoustic noise reduction	Off	

# Sequence - Part 2

Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	135 deg
Max. TR	6000.0 ms
Allowed Delay	0 s

# \\MR Physics 2 - AAT\Lower Limb\Foot\AAT options\t1\_tse\_tra-AAT-DRB \*

TA: 52 sec Coil Selection: Auto Voxel Size: 0.2×0.2×4.0 mm³ Acc:: 3 Rel. SNR: 1.00

### **Properties**

Start measurement without further	On
preparation	
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	762.0 ms
TE	9.90 ms
Averages	1
Concatenations	2
AutoAlign	

### **Contrast - Common**

TR	762.0 ms
TE	9.90 ms
TD	0.00 ms
MTC	Off
Magn. Preparation	None
Flip Angle	140 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

# **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

#### **Resolution - Common**

FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
Base Resolution	320
Phase Resolution	75 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	24
Deep Resolve	On
Phase Partial Fourier	Off

### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

# **Geometry - Common**

Slice Group	1
Slices	40
Distance Factor	10 %
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
Phase Oversampling	0 %
FoV Read	130 mm
FoV Phase	100.0 %
Slice Thickness	4.0 mm
TR	762.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	2

Slice Group	1
Position	L43.7 A100.6 F73.7 mm
Orientation	C > T-24.5 > S0.1
Phase Encoding Dir.	R >> L
AutoAlign	
Initial Position	L43.7 A100.6 F73.7
L	43.7 mm
A	100.6 mm
F	73.7 mm
Initial Orientation	C > T
C > T	-24.50

> S	0.10
Initial Rotation	-0.63 deg

# **Geometry - Navigator**

# **Geometry - Saturation**

Special Saturation	None
Special Saturation	None

### **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	74 mm
Table Position	F
Inline Composing	Off

### **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >>> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

### **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

### System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	762.0 ms
Concatenations	2

### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	130 mm
FoV Phase	100.0 %
Phase Resolution	75 %
Motion Correction	None

# **Physio - PACE**

Resp. Control	Off
Concatenations	2

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

Inline Composing	Off
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### Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	230 Hz/Px
Echo Spacing	9.88 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	3
Echo Trains per Slice	32

Introduction	On	
Phase Correction	Off	
Compensate T2 Decay	Off	
Fast Mode	Off	
WARP	Off	
Red. EC Sensitivity	Off	
Acoustic noise reduction	Off	

# Sequence - Part 2

Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	140 deg
Max. TR	800.0 ms
Allowed Delay	0 s

# $\label{lem:limble} $$ \MR Physics 2 - AAT\Lower Limb\Foot\AAT options\t2\_tse\_sag-AAT-DRB *$ $$$

TA: 49 sec Coil Selection: Auto Voxel Size: 0.3×0.3×3.0 mm³ Acc:: 3 Rel. SNR: 1.00

### **Properties**

Start measurement without further preparation	On
Wait for User to Start	Off
Start measurements	Single Measurement
Prio Recon	Off
Auto Open Inline Display	Off
Auto Close Inline Display	Off
Load Images to MR View&GO	On
Auto Store Images	On
Load Images to Stamp Segments	On
Load Images to Graphic Segments	On
Graphic segment	Default
Inline Movie	Off

#### Routine

Slice Group	1
Slices	30
Distance Factor	10 %
Position	R54.7 A79.2 F67.4 mm
Orientation	S > T-12.0 > C5.5
Phase Encoding Dir.	P >> A
Phase Oversampling	25 %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3680.0 ms
TE	80.00 ms
Averages	1
Concatenations	1
AutoAlign	

### **Contrast - Common**

TR	3680.0 ms
TE	80.00 ms
МТС	Off
Magn. Preparation	None
Flip Angle	130 deg
Fat-Water Contrast	Standard
Dark Blood	Off
Contrasts	1
Wrap-up Magn.	None
Reconstruction	Magnitude

### **Contrast - Dynamic**

Dynamic Mode	Standard
Measurements	1
Multiple Series	Off

# **Resolution - Common**

FoV Read	250 mm

#### **Resolution - Common**

FoV Phase	100.0 %
Slice Thickness	3.0 mm
Base Resolution	416
Phase Resolution	75 %
Interpolation	On

### **Resolution - Acceleration**

Acceleration mode	GRAPPA
Reference Scans	Integrated
Acceleration Factor PE	3
Reference Lines PE	39
Deep Resolve	On
Phase Partial Fourier	Off

#### **Resolution - Filter**

Raw Filter	Off
Elliptical Filter	Off
Distortion Correction	2D
Normalize	Prescan
Image Filter	Off

### **Geometry - Common**

Slice Group	1
Slices	30
Distance Factor	10 %
Position	R54.7 A79.2 F67.4 mm
Orientation	S > T-12.0 > C5.5
Phase Encoding Dir.	P >> A
Phase Oversampling	25 %
FoV Read	250 mm
FoV Phase	100.0 %
Slice Thickness	3.0 mm
TR	3680.0 ms
Multi-Slice Mode	Interleaved
Series	Interleaved
Concatenations	1

Slice Group	1
Position	R54.7 A79.2 F67.4 mm
Orientation	S > T-12.0 > C5.5
Phase Encoding Dir.	P >> A
AutoAlign	
Initial Position	R54.7 A79.2 F67.4
R	54.7 mm
Α	79.2 mm
F	67.4 mm
Initial Orientation	S > T
S > T	-12.00
> C	5.50

Initial Rotation	179.02 deg

# **Geometry - Navigator**

### **Geometry - Saturation**

Special Saturation	None

# **Geometry - Tim Planning Suite**

Set-n-Go Protocol	Off
Table Position	67 mm
Table Position	F
Inline Composing	Off

## **System - Miscellaneous**

Coil Selection	ACS All but spine
Radial Sorting	Off
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	H >> F
Coil Combination	Adaptive Combine
Matrix Optimization	Off
Coil Focus	Flat

# **System - Adjustments**

Adjustment Strategy	Standard
BO Shim	Tune up
CoilShim	Off
Adjustment Tolerance	Auto
Adjust with Body Coil	Off
Confirm Frequency	Never
Assume Silicone	Off

# System - Adjust Volume

Position	Isocenter
Orientation	Transversal
Rotation	0.00 deg
A >> P	263 mm
R >> L	350 mm
F >> H	350 mm
Reset	Off

## System - Tx/Rx

Frequency 1H	63.679887 MHz
? Ref. Amplitude 1H	0.000 V
Reset	Off
Image Scaling	1.000

# Physio - Signal

1st Signal/Mode	None
TR	3680.0 ms
Concatenations	1

### Physio - Cardiac

Fat-Water Contrast	Standard
Magn. Preparation	None
Dark Blood	Off
FoV Read	250 mm
FoV Phase	100.0 %
Phase Resolution	75 %
Motion Correction	None

### **Physio - PACE**

Resp. Control	Off
Concatenations	1

### **Inline - Subtraction**

Subtract	Off
Measurements	1
StdDev	Off
Motion Correction	None
Save Original Images	On

### Inline - MIP

MIP Sag	Off
MIP Cor	Off
MIP Tra	Off
MIP Time	Off
Radial MIP	Off
Save Original Images	On
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

### **Inline - Composing**

### Sequence - Part 1

Sequence Name	tse
Dimension	2D
RF Pulse Type	Normal
Gradient Mode	Fast
Flow Compensation	None
Bandwidth	223 Hz/Px
Echo Spacing	8.86 ms
Free Echo Spacing	Off
Define	Turbo Factor
Turbo Factor	13
Echo Trains per Slice	12

Introduction	On
Phase Correction	Off
Compensate T2 Decay	Off
Fast Mode	Off
WARP	Off
Red. EC Sensitivity	Off
Acoustic noise reduction	Off

# Sequence - Part 2

Reduce Motion Sens.	Off
Motion Correction	None

SAR Assistant	Flip Angle > TR
Min Flip Angle	130 deg
Max. TR	6000.0 ms
Allowed Delay	0 s