$\verb|\USER\Feinberg| lab \Suhyung \GRASE \localizer\_50V\_newcoil|$ 

Rel. SNR: 1.00

SIEMENS: gre

Voxel size: 2.5×1.9×2.0 mm

TA: 1:06

roperties Prio Recon Before measurement After measurement Load to viewer	Off	Elliptical filter	
Before measurement After measurement	OII		
After measurement		Geometry	Commercial
		Multi-slice mode Series	Sequential Interleaved
	On	Series	interieaved
	On Off	Saturation mode	Standard
Inline movie	Off	Special sat.	None
Auto store images	On O"		
Load to stamp segments	Off	Table position	Н
Load images to graphic	Off	Table position	0 mm
segments	0"	Inline Composing	Off
Auto open inline display	Off		
Start measurement without further preparation	On	Tim CT mode	Off
Wait for user to start	Off	System	
Start measurements	single	LV1	On
ti		LV2	On
outine		LV3	On
Slab group 1		LV4	On
Slabs	1	LV5	On
Dist. factor	20 %	LV6	On
Position	Isocenter	LV7	On
Orientation	Transversal	LV8	On
Phase enc. dir.	A >> P	LV9	On
Rotation	0.00 deg	L10	On
Phase oversampling	0 %	L11	On
Slice oversampling	0.0 %	L12	On
Slices per slab	80	L13	On
FoV read	240 mm	L14	On
FoV phase	84.4 %	L15	On
Slice thickness	2.00 mm	L16	On
TR	10.0 ms	L17	On
TE	3.69 ms	L17	On
Averages	1		_
Concatenations	1	L19	On
Filter	None	L20	On
Coil elements	L10-24;LV1-9	L21	On
Coll elements	L10-24,LV1-9	L22	On
ontrast		L23	On
MTC	Off	——   L24	On
Magn. preparation	None	Positioning mode	FIX
Flip angle	10 deg	MSMA	S - C - T
Fat suppr.	None	Sagittal	R >> L
Water suppr.	None	Coronal	A >> P
SWI	Off	Transversal	F >> H
		Save uncombined	On
Averaging mode	Short term	Coil Combine Mode	Sum of Squares
Reconstruction	Magnitude		·
Measurements	1	AutoAlign Auto Coil Select	Off
Multiple series	Each measurement	Auto Coil Select	OII
esolution		Shim mode	Tune up
Base resolution	128	Adjust with body coil	Off
Phase resolution	74 %	Confirm freq. adjustment	Off
Slice resolution	100 %	Assume Silicone	Off
	Off	! Ref. amplitude 1H	50.000 V
Phase partial Fourier		Adjustment Tolerance	Auto
Slice partial Fourier	Off	Adjust volume	
Interpolation	On	Position	Isocenter
PAT mode	None	Orientation	Transversal
Image Filter	Off	Rotation	0.00 deg
Distortion Corr.	Off	R >> L	350 mm
Prescan Normalize	Off	A >> P	263 mm
Normalize	Off	F >> H	350 mm
	Off	Physio	
B1 filter	Jii	i iiyəiu	

Segments	1
Tagging Dark blood	None Off
Resp. control	Off
Inline	
Subtract	Off
Liver registration	Off
Std-Dev-Sag	Off
Std-Dev-Cor	Off Off
Std-Dev-Tra Std-Dev-Time	Off
	Off
MIP-Sag MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Save original images	On
Wash - In	Off
Wash - Out	Off
TTP	Off Off
PEI MIP - time	Off
WIP - UITIE	OII
MapIt	None
Contrasts	1
ı	•
Sequence	
Introduction	On
Dimension	3D Off
Elliptical scanning Phase stabilisation	Off
Asymmetric echo	Off
Bandwidth	320 Hz/Px
Flow comp.	No
RF pulse type	Normal
Gradient mode	Whisper
Excitation	Slab-sel.
RF spoiling	On

\\USER\Feinberglab\Suhyung\GRASE\grase3d\_reference

TA: 0:12	Voxel size: 2.5×2.5×2.0 mm	Rel. SNR: 1.00 USER: (	grase3d_tmp
Properties		Table position	0 mm
Prio Recon	Off	Inline Composing	Off
Before measurement	Oli	System	
After measurement		T1	On
Load to viewer	On	M2	On
Inline movie	Off	B4	On
Auto store images	On	M3	On
Load to stamp segments	Off	V32	Off
Load images to graphic	Off		
segments		Positioning mode	REF
Auto open inline display	Off	MSMA	S-C-T
Start measurement without	On	Sagittal	R >> L
further preparation		Coronal	A >> P
Wait for user to start	Off	Transversal	F >> H
Start measurements	single	Save uncombined	Off
Poutino	-	Coil Combine Mode	Adaptive Combine
Routine		AutoAlign	Defectit
Slab group 1	1	Auto Coil Select	Default
Slabs Dist. factor	1 0 %	Shim mode	Standard
Position	0 % Isocenter	Adjust with body coil	Off
Orientation	Transversal	Confirm freq. adjustment	Off
Phase enc. dir.	A >> P	Assume Silicone	Off
Rotation	0.00 deg	? Ref. amplitude 1H	0.000 V
Phase oversampling	0.00 deg 0 %	Adjustment Tolerance	Auto
Slice oversampling	0.0 %	Adjust volume	
Slices per slab	80	Position	Isocenter
FoV read	240 mm	Orientation	Transversal
FoV phase	84.2 %	Rotation	0.00 deg
Slice thickness	2.0 mm	R >> L	240 mm
TR	3000 ms	A >> P	202 mm
TE	49.4 ms	F >> H	160 mm
Averages	1	Physio	
Concatenations	1	1st Signal/Mode	None
Filter	None	Segments	4
Coil elements	B4;M2,3;T1	Segments	4
_	<i>_</i> ,, <u>_</u> ,e,	Composing	
Contrast		- Sequence	
Flip angle	180 deg	Introduction	Off
Fat suppr.	Fat sat.	Dimension	3D
Fat sat. mode	Strong	Reordering	Centric
Averaging mode	Long term	Contrasts	1
Reconstruction	Magnitude	Bandwidth	2264 Hz/Px
Measurements	1	Echo spacing	0.6 ms
Multiple series	Each measurement		
·		Turbo factor	20
Resolution	00	EPI factor	80
Base resolution	96	RF pulse type	Normal
Phase resolution	99 %	Gradient mode	Fast
Slice resolution	100 %	ASL mode	fASL non-selective
Slice partial Fourier	Off	Pre sat	Off
Interpolation	Off	Post sat	Off
Prescan Normalize	Off	manual LABEL/SAT region	Off
Raw filter	Off	Saturation mode	const 90
Coometry.		Background Suppr	NOBackgroundsupp
Geometry	latada e la	- BS parameter_1	700 ms
Series	Interleaved	BS parameter_2	100 ms
Sat. region 1		FOCI parameter_0	800
Thickness	60 mm	FOCI parameter_1	24
Position	Isocenter	FOCI parameter_2	1.0
Orientation	Transversal	FOCI parameter_3	2000
Special sat.	None	FOCI parameter_4	0.500
1			
Table position	Н	Additional scaling factor	10.0

z-spoiling Start of time series equal 1700 ms Increment time series 100 ms Length of time series Bolus length

1400 ms

	\\USER\Feinberglab\Suhyun	g\GRASE\grase3d cs SH	<u> </u>
TA: 1:36	Voxel size: 2.5×2.5×2.0 mm	<b>o</b>	grase3d_SH
Proportion		Pause after meas. 21	0.0 s
Properties	0#	Pause after meas. 22	0.0 s
Prio Recon	Off	Pause after meas. 23	0.0 s
Before measurement		Pause after meas. 24	0.0 s
After measurement		Pause after meas. 25	0.0 s
Load to viewer	On	Pause after meas, 26	0.0 s
Inline movie	Off	Pause after meas, 27	0.0 s
Auto store images	On	Pause after meas. 28	0.0 s
Load to stamp segments	Off	Pause after meas. 29	0.0 s
Load images to graphic	Off	Pause after meas. 30	0.0 s
segments		Pause after meas. 31	0.0 s
Auto open inline display	Off	Multiple series	Each measurement
Start measurement without	On	Widitiple Selles	Lacii illeasuleilleill
further preparation		Resolution	
Wait for user to start	Off	Base resolution	96
Start measurements	single	Phase resolution	99 %
D 6		Slice resolution	100 %
Routine		Slice partial Fourier	Off
Slab group 1		Interpolation	Off
Slabs	1		
Dist. factor	0 %	Prescan Normalize	Off
Position	Isocenter	Raw filter	Off
Orientation	Transversal	Geometry	
Phase enc. dir.	A >> P		Interlegued
Rotation	0.00 deg	Series	Interleaved
Phase oversampling	0 %	Sat. region 1	
Slice oversampling	0.0 %	Thickness	60 mm
Slices per slab	80	Position	Isocenter
FoV read	240 mm	Orientation	Transversal
FoV phase	84.2 %	Special sat.	None
Slice thickness	2.0 mm		
TR	3000 ms	Table position	Н
TE	46.2 ms	Table position	0 mm
Averages	1	Inline Composing	Off
Concatenations	1	System	
Filter	None	System	0
Coil elements	B4;M2,3;T1	T1	On
	D4,IVIZ,3,1 1	M2	On
Contrast		B4	On
Flip angle	180 deg	M3	On
Fat suppr.	Fat sat.	V32	Off
Fat sat. mode	Strong	Positioning mode	REF
		MSMA	S-C-T
Averaging mode	Long term	Sagittal	R >> L
Reconstruction	Magnitude	Coronal	A >> P
Measurements	32	Transversal	F >> H
Pause after meas. 1	0.0 s	Save uncombined	Off
Pause after meas. 2	0.0 s	Coil Combine Mode	
Pause after meas. 3	0.0 s		Adaptive Combine
Pause after meas. 4	0.0 s	AutoAlign Auto Coil Select	 Default
Pause after meas. 5	0.0 s	Auto Coli Select	Delauit
Pause after meas. 6	0.0 s	Shim mode	Standard
Pause after meas. 7	0.0 s	Adjust with body coil	Off
Pause after meas. 8	0.0 s	Confirm freq. adjustment	Off
Pause after meas. 9	0.0 s	Assume Silicone	Off
Pause after meas. 10	0.0 s	? Ref. amplitude 1H	0.000 V
Pause after meas. 11	0.0 s	Adjustment Tolerance	Auto
Pause after meas. 12	0.0 s	Adjust volume	, (0.0
Pause after meas. 13	0.0 s	Position	Isocenter
Pause after meas. 14	0.0 s	Orientation	Transversal
Pause after meas. 15	0.0 s		
Pause after meas. 16	0.0 s	Rotation	0.00 deg
Pause after meas. 17	0.0 s	R >> L	240 mm
Pause after meas. 17 Pause after meas. 18	0.0 s 0.0 s	A >> P	202 mm
		F >> H	160 mm
Pause after meas. 19	0.0 s	Physio	
Pause after meas. 20	0.0 s	,	

1st Signal/Mode	None
Segments	1

#### Composing

Sequence	
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_		
	Introduction	Off
	Dimension	3D
	Reordering	Centric
	Contrasts	1
	Bandwidth	2264 Hz/Px
	Echo spacing	0.5 ms
	Turbo factor	80
	EPI factor	80
	RF pulse type	Normal
	Gradient mode	Fast
	ASL mode	fASL slice-selective

Pre sat Off Off Post sat manual LABEL/SAT region

Off Saturation mode const 90

**Background Suppr** NOBackgroundsupp

BS parameter\_1 700 ms BS parameter\_2 100 ms FOCI parameter\_0 800 FOCI parameter\_1 24 FOCI parameter\_2 1.0 FOCI parameter\_3 2000 FOCI parameter\_4 0.500 Additional scaling factor 10.0 Distribution Mode Equal z-spoiling equal Start of time series 1700 ms Increment time series 100 ms Length of time series 1400 ms

Bolus length

\\USER\Feinberglab\Suhyung\GRASE\grase3d\_cspf\_SH

TA: 1:36	Voxel size: 2.5×2.5×2.0 mm	•	ER: grase3d_cs_SH
		Pause after meas, 21	0.0 s
Properties		Pause after meas. 22	0.0 s
Prio Recon	Off	Pause after meas. 23	0.0 s
Before measurement		Pause after meas. 24	0.0 s
After measurement		Pause after meas. 25	0.0 s
Load to viewer	On	Pause after meas. 26	0.0 s
Inline movie	Off	Pause after meas. 27	0.0 s
Auto store images	On	Pause after meas. 28	0.0 s
Load to stamp segments	Off	Pause after meas. 29	0.0 s
Load images to graphic	Off	Pause after meas. 30	0.0 s
segments		Pause after meas. 31	0.0 s
Auto open inline display	Off	Multiple series	Each measurement
Start measurement without	On		Eddit moddaromont
further preparation		Resolution	
Wait for user to start	Off	Base resolution	96
Start measurements	single	Phase resolution	99 %
Routine		Slice resolution	100 %
Slab group 1		Phase partial Fourier	Off
Slabs	1	Slice partial Fourier	Off
Dist. factor	1 0 %	Interpolation	Off
Position	Isocenter	Prescan Normalize	Off
Orientation	Transversal	Raw filter	Off
	A >> P	Raw IIItel	Oil
Phase enc. dir.		Geometry	
Rotation	0.00 deg 0 %	Series	Interleaved
Phase oversampling	0.0 %	0-1 4	
Slice oversampling	80	Sat. region 1	00
Slices per slab FoV read	240 mm	Thickness	60 mm
	-	Position	Isocenter
FoV phase	84.2 %	Orientation	Transversal
Slice thickness	2.0 mm 3000 ms	Special sat.	None
TR TE		Table position	Н
	46.2 ms	Table position	0 mm
Averages	1 1	Inline Composing	Off
Concatenations Filter	None	1	
Coil elements	B4;M2,3;T1	System	
Con elements	D4,IVI2,3,1 1	T1	On
Contrast		M2	On
Flip angle	180 deg	B4	On
Fat suppr.	Fat sat.	M3	On O#
Fat sat. mode	Strong	V32	Off
Averaging mode	Long term	Positioning mode	REF
Reconstruction	Magnitude	MSMA	S - C - T
Measurements	32	Sagittal	R >> L
Pause after meas. 1	0.0 s	Coronal	A >> P
Pause after meas. 2	0.0 s	Transversal	F >> H
Pause after meas. 3	0.0 s 0.0 s	Save uncombined	Off
Pause after meas. 4	0.0 s	Coil Combine Mode	Adaptive Combine
Pause after meas. 5	0.0 s 0.0 s	AutoAlign	· 
		Auto Coil Select	Default
Pause after meas. 6	0.0 s		
Pause after meas. 7	0.0 s	Shim mode	Standard
Pause after meas. 8	0.0 s	Adjust with body coil	Off
Pause after meas. 9	0.0 s	Confirm freq. adjustme	
Pause after meas. 10	0.0 s	Assume Silicone	Off
Pause after meas. 11	0.0 s	? Ref. amplitude 1H	0.000 V
Pause after meas. 12	0.0 s	Adjustment Tolerance	Auto
Pause after meas. 13	0.0 s	Adjust volume	_
Pause after meas. 14	0.0 s	Position	Isocenter
Pause after meas. 15	0.0 s	Orientation	Transversal
Pause after meas. 16	0.0 s	Rotation	0.00 deg
Pause after meas. 17	0.0 s	R >> L	240 mm
Pause after meas. 18	0.0 s	A >> P	202 mm
Pause after meas. 19	0.0 s	F >> H	160 mm
Pause after meas. 20	0.0 s		

Physio				
1st Signal/Mode	None			
Segments	1			
Composing				
Sequence				
Introduction	Off			
Dimension	3D Contrin			
Reordering Contrasts	Centric 1			
Bandwidth	2264 Hz/Px			
Echo spacing	0.5 ms			
Turbo factor	00			
EPI factor	80 80			
RF pulse type	Normal			
Gradient mode	Fast			
ASL mode	fASL slice-selective			
Pre sat	Off			
Post sat	Off			
manual LABEL/SAT region	Off			
Saturation mode	const 90			
Background Suppr	NOBackgroundsupp			
BS parameter_1 BS parameter_2	700 ms 100 ms			
FOCI parameter_0	800			
FOCI parameter_1	24			
FOCI parameter_2	1.0			
FOCI parameter_3	2000			
FOCI parameter_4	0.500			
Additional scaling factor	10.0			
Distribution Mode	Equal			
z-spoiling Start of time series	equal 1700 ms			
Increment time series	100 ms			
Length of time series	1			
Bolus length	1400 ms			
Number of echoes	1			

\\USER\Feinberglab\Suhyung\GRASE\grase3d\_cs\_ms\_SH

TA: 3:12	Voxel size: 2.5×2.5×2.0 mm	•	R: grase3d_SH
Description		Pause after meas. 21	0.0 s
Properties	~"	Pause after meas. 22	0.0 s
Prio Recon	Off	Pause after meas, 23	0.0 s
Before measurement		Pause after meas. 24	0.0 s
After measurement		Pause after meas. 25	0.0 s
Load to viewer	On	Pause after meas. 26	0.0 s
Inline movie	Off	Pause after meas. 27	0.0 s
Auto store images	On	Pause after meas. 28	0.0 s
Load to stamp segments	Off		
Load images to graphic	Off	Pause after meas. 29	0.0 s
segments		Pause after meas. 30	0.0 s
Auto open inline display	Off	Pause after meas. 31	0.0 s
Start measurement without	On	Multiple series	Each measurement
	Oli	Resolution	
further preparation	0#		00
Wait for user to start	Off	Base resolution	96
Start measurements	single	Phase resolution	99 %
Routine		Slice resolution	100 %
		Slice partial Fourier	Off
Slab group 1	4	Interpolation	Off
Slabs	1		0"
Dist. factor	0 %	Prescan Normalize	Off
Position	Isocenter	Raw filter	Off
Orientation	Transversal	Geometry	
Phase enc. dir.	A >> P	· · · · · · · · · · · · · · · · · · ·	lata da aya d
Rotation	0.00 deg	Series	Interleaved
Phase oversampling	0 %	Sat. region 1	
Slice oversampling	0.0 %	Thickness	60 mm
Slices per slab	80	Position	Isocenter
FoV read	240 mm		
		Orientation	Transversal
FoV phase	84.2 %	Special sat.	None
Slice thickness	2.0 mm	Table position	Н
TR	3000 ms	Table position	
TE	47.8 ms		0 mm
Averages	1	Inline Composing	Off
Concatenations	1	System	
Filter	None	T1	On
Coil elements	B4;M2,3;T1		_
Con diemente	B 1,1012,0,1 1	M2	On
Contrast		B4	On
Flip angle	180 deg	M3	On
Fat suppr.	Fat sat.	V32	Off
Fat sat. mode	Strong	Desitioning mode	DEE
		Positioning mode	REF
Averaging mode	Long term	MSMA	S-C-T
Reconstruction	Magnitude	Sagittal	R >> L
Measurements	32	Coronal	A >> P
Pause after meas. 1	0.0 s	Transversal	F >> H
Pause after meas. 2	0.0 s	Save uncombined	Off
Pause after meas. 3	0.0 s	Coil Combine Mode	Adaptive Combine
Pause after meas. 4		AutoAlign	
	0.0 s	Auto Coil Select	Default
Pause after meas. 5	0.0 s		
Pause after meas. 6	0.0 s	Shim mode	Standard
Pause after meas. 7	0.0 s	Adjust with body coil	Off
Pause after meas. 8	0.0 s	Confirm freq. adjustment	Off
Pause after meas. 9	0.0 s	Assume Silicone	Off
Pause after meas. 10	0.0 s	? Ref. amplitude 1H	0.000 V
Pause after meas. 11	0.0 s	-	
Pause after meas. 12	0.0 s	Adjustment Tolerance	Auto
Pause after meas. 12	0.0 s 0.0 s	Adjust volume	
		Position	Isocenter
Pause after meas. 14	0.0 s	Orientation	Transversal
Pause after meas. 15	0.0 s	Rotation	0.00 deg
Pause after meas. 16	0.0 s	R >> L	240 mm
Pause after meas. 17	0.0 s	A >> P	202 mm
Pause after meas. 18	0.0 s	F >> H	160 mm
Pause after meas. 19	0.0 s	1 11	100 111111
Pause after meas. 20	0.0 s	Physio	
i ause alter meas. 20	0.0 3		

1st Signal/Mode	None
Segments	2

#### Composing

Sequence	
Introduction	Off
Dimension	3D
Reordering	Centric
Contrasts	1
Bandwidth	2264 Hz/Px
Echo spacing	0.5 ms
Turbo factor	40
EPI factor	80
RF pulse type	Normal
Gradient mode	Fast
ASL mode	fASL slice-selective
Pre sat	Off
Post sat	Off
manual LABEL/SAT region	Off

Saturation mode const 90 Background Suppr

NOBackgroundsupp

BS parameter\_1 700 ms BS parameter\_2 100 ms FOCI parameter\_0 800 FOCI parameter\_1 24 FOCI parameter\_2 1.0 FOCI parameter\_3 2000 FOCI parameter\_4 0.500 Additional scaling factor 10.0 Distribution Mode Equal z-spoiling equal Start of time series 1700 ms Increment time series 100 ms Length of time series Bolus length 1400 ms

\\USER\Feinberglab\Suhyung\GRASE\grase3d\_cspf\_ms\_SH

Properties	TA: 3:12	Voxel size: 2.5×2.5×2.0 mm	Rel. SNR: 1.00 USER: gr	rase3d_cs_SH
Price Recon   Price Reconsist   Price Reconsist   Price Reconsist   Price Reconsist   Price Reconsist   Price Reconsist   Price Reconstruction   Price Recons	Properties			
Before measurement   After measurement   Load to viewer		Off		
Alter measurement   Load to viewer   On   Inline movie   Or   Inline movie   Or   Inline movie   Or   Or   Pause after meas. 25   0.0 s   Pause after meas. 26   0.0 s   Pause after meas. 27   0.0 s   Pause after meas. 27   0.0 s   Pause after meas. 28   0.0 s   Pause after meas. 29   0.0 s   Pause after meas. 20   0.0 s   Pause after meas. 31   0.0 s   Pause after meas. 32   0.0 s   Pause after meas. 32   0.0 s   Pause after meas. 34   0.0 s   Pause after meas. 34   0.0 s   Pause after meas. 35   0.0 s   Pause after meas. 36   0.0 s   Pause after meas. 37   0.0 s   Pause after meas. 37   0.0 s   Pause after meas. 38   0.0 s   Pause after meas. 39   0.0 s   Pause after meas. 30   0.0 s   Pause after me	Before measurement			
Laad to viewer	After measurement			
Inline movie	Load to viewer	On		
Auto Store images	Inline movie	Off		
Laad to stamp segments   Off	Auto store images	On		
Load miages to graphic segments   Auto open inline display   Off	Load to stamp segments	_		
Segments	Load images to graphic	Off		
Auto open inline display   Off   Multiple series   Each measurement				
Start measurement without further preparation   Wait for user to start   Off   Base resolution   96   Phase resolution   99 %   Silice resolution   00 %   Phase partial Fourier   Off   Silice partial Fourier   Off   Interpolation   Off   Silice partial Fourier   Off   Interpolation   Off   Silice partial Fourier   Off   Interpolation   Off   Silice partial Fourier   Off   Silice partial	Auto open inline display	Off		
Wait for user to start   Start measurements   Sta	Start measurement without	On		Lacifficasarement
Statt measurements			Resolution	
Routine			Base resolution	
Slab group 1	Start measurements	single	Phase resolution	
Slab group 1   Slabs	Routine			
Slabs				Off
Dist factor		1		Off
Postition	- 10.00		Interpolation	Off
Orientation			Process Normaliza	Off
Phase enc. dir.   A >> P   Rotation   0.00 deg				_
Rotation			Naw Iliter	Oli
Phase oversampling			Geometry	
Silce oversampling   Silce per slab   80			Series	Interleaved
Silces per slab			Cot monitor 4	
FoV read				00
Following	·			
Silice thickness   2.0 mm   Special sat.   None   TR   3000 ms   TE   47.8 ms   Table position   H   Table position   Omm   Table position   Omm   Off   Table position   Omm   Off   Table position   Omm   Off   Table position   Omm   Off		-		
TR				
TE			Special sat.	None
Table position			Table position	Н
Inline Composing   Off				0 mm
Filter				Off
Tile		·	1	
M2				
Flip angle	Con elements	B4,IVI2,3,11		
Fat suppr.   Fat sat.   M3	Contrast			
Fat suppr.         Fat sat.         M3         On           Fat sat. mode         Strong         V32         Off           Averaging mode         Long term         Positioning mode         REF           Reconstruction         Magnitude         MSMA         S - C - T           Measurements         32         Coronal         A >> P           Pause after meas. 1         0.0 s         Sagittal         R >> L           Pause after meas. 2         0.0 s         Transversal         F >> H           Pause after meas. 3         0.0 s         Save uncombined         Off           Pause after meas. 4         0.0 s         Save uncombined         Adaptive Combine           Pause after meas. 5         0.0 s         Auto Coil Select         Default           Pause after meas. 6         0.0 s         Auto Coil Select         Default           Pause after meas. 8         0.0 s         Adjust with body coil         Off           Pause after meas. 9         0.0 s         Adjust with body coil         Off           Pause after meas. 10         0.0 s         Pause after meas. 10         On s           Pause after meas. 11         0.0 s         Pause after meas. 12         0.0 s           Pause after meas. 14         0.0	Flip angle	180 deg		
Averaging mode				
Notes   Note	Fat sat. mode	Strong	V32	Off
Notes   Note	Avoraging mode	Long torm	Positioning mode	REF
Negritude   Negr				S - C - T
Pause after meas. 1 0.0 s Pause after meas. 2 0.0 s Pause after meas. 3 0.0 s Pause after meas. 4 0.0 s Pause after meas. 5 0.0 s Pause after meas. 6 0.0 s Pause after meas. 7 0.0 s Pause after meas. 8 0.0 s Pause after meas. 8 0.0 s Pause after meas. 9 0.0 s Pause after meas. 10 0.0 s Pause after meas. 10 0.0 s Pause after meas. 11 0.0 s Pause after meas. 12 0.0 s Pause after meas. 12 0.0 s Pause after meas. 13 0.0 s Pause after meas. 14 0.0 s Pause after meas. 15 0.0 s Pause after meas. 16 0.0 s Pause after meas. 17 0.0 s Pause after meas. 18 0.0 s Pause after meas. 19 0.0 s Pause after meas. 18 0.0 s Pause after meas. 18 0.0 s Pause after meas. 18 0.0 s Pause after meas. 19 0.0 s			Sagittal	
Pause after meas. 1 Pause after meas. 2 Pause after meas. 3 Pause after meas. 3 Pause after meas. 4 Pause after meas. 4 Pause after meas. 5 Pause after meas. 5 Pause after meas. 6 Pause after meas. 6 Pause after meas. 7 Pause after meas. 7 Pause after meas. 8 Pause after meas. 8 Pause after meas. 9 Pause after meas. 10 Pause after meas. 11 Pause after meas. 12 Pause after meas. 12 Pause after meas. 13 Pause after meas. 14 Pause after meas. 15 Pause after meas. 15 Pause after meas. 16 Pause after meas. 17 Pause after meas. 18 Pause after meas. 18 Pause after meas. 17 Pause after meas. 18 Pause after meas. 18 Pause after meas. 18 Pause after meas. 18 Pause after meas. 19 Pau				
Pause after meas. 3 0.0 s Pause after meas. 4 0.0 s Pause after meas. 5 0.0 s Pause after meas. 6 0.0 s Pause after meas. 7 0.0 s Pause after meas. 8 0.0 s Pause after meas. 9 0.0 s Pause after meas. 10 0.0 s Pause after meas. 11 0.0 s Pause after meas. 12 0.0 s Pause after meas. 13 0.0 s Pause after meas. 13 0.0 s Pause after meas. 14 0.0 s Pause after meas. 15 0.0 s Pause after meas. 16 0.0 s Pause after meas. 17 0.0 s Pause after meas. 18 0.0 s Pause after meas. 18 0.0 s Pause after meas. 19 0.0 s				F >> H
Pause after meas. 4 Pause after meas. 5 Pause after meas. 5 Pause after meas. 6 Pause after meas. 6 Pause after meas. 7 Pause after meas. 7 Pause after meas. 8 Pause after meas. 8 Pause after meas. 9 Pause after meas. 10 Pause after meas. 11 Pause after meas. 12 Pause after meas. 12 Pause after meas. 13 Pause after meas. 14 Pause after meas. 15 Pause after meas. 15 Pause after meas. 16 Pause after meas. 17 Pause after meas. 18 Pause after meas. 19 Pause after meas. 1			Save uncombined	Off
Pause after meas. 5			Coil Combine Mode	
Pause after meas. 6 Pause after meas. 6 Pause after meas. 6 Pause after meas. 7 Pause after meas. 7 Pause after meas. 8 Pause after meas. 8 Pause after meas. 8 Pause after meas. 9 Pause after meas. 10 Pause after meas. 10 Pause after meas. 11 Pause after meas. 12 Pause after meas. 12 Pause after meas. 13 Pause after meas. 13 Pause after meas. 14 Pause after meas. 15 Pause after meas. 15 Pause after meas. 16 Pause after meas. 17 Pause after meas. 18 Pause after meas. 18 Pause after meas. 19  Auto Coil Select  Default  Adjust with body coil Off  Assume Silicone Off  Paujustment Tolerance Adjust volume Position Position Orientation Transversal Rotation O.00 deg R >> L Pause after meas. 18 Pause after meas. 18 Pause after meas. 18 Pause after meas. 19 Pause a				-
Pause after meas. 7 Pause after meas. 7 Pause after meas. 8 Pause after meas. 8 Pause after meas. 8 Pause after meas. 9 Pause after meas. 9 Pause after meas. 10 Pause after meas. 10 Pause after meas. 11 Pause after meas. 12 Pause after meas. 12 Pause after meas. 13 Pause after meas. 14 Pause after meas. 15 Pause after meas. 15 Pause after meas. 16 Pause after meas. 17 Pause after meas. 18 Pause after meas. 18 Pause after meas. 19 Pause after meas				Default
Pause after meas. 8       0.0 s       Adjust with body coil       Off         Pause after meas. 9       0.0 s       Confirm freq. adjustment       Off         Pause after meas. 10       0.0 s       Assume Silicone       Off         Pause after meas. 11       0.0 s       ? Ref. amplitude 1H       0.000 V         Pause after meas. 12       0.0 s       Adjustment Tolerance       Auto         Pause after meas. 13       0.0 s       Adjust volume         Pause after meas. 14       0.0 s       Position       Isocenter         Pause after meas. 15       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       R >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				
Pause after meas. 9       0.0 s       Confirm freq. adjustment       Off         Pause after meas. 10       0.0 s       Assume Silicone       Off         Pause after meas. 11       0.0 s       ? Ref. amplitude 1H       0.000 V         Pause after meas. 12       0.0 s       Adjustment Tolerance       Auto         Pause after meas. 13       0.0 s       Adjust volume         Pause after meas. 14       0.0 s       Position       Isocenter         Pause after meas. 15       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				
Pause after meas. 10       0.0 s       Assume Silicone       Off         Pause after meas. 11       0.0 s       ? Ref. amplitude 1H       0.000 V         Pause after meas. 12       0.0 s       Adjustment Tolerance       Auto         Pause after meas. 13       0.0 s       Adjust volume         Pause after meas. 14       0.0 s       Position       Isocenter         Pause after meas. 15       0.0 s       Orientation       Transversal         Pause after meas. 16       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				
Pause after meas. 11       0.0 s       ? Ref. amplitude 1H       0.000 V         Pause after meas. 12       0.0 s       Adjustment Tolerance       Auto         Pause after meas. 13       0.0 s       Adjust volume         Pause after meas. 14       0.0 s       Position       Isocenter         Pause after meas. 15       0.0 s       Orientation       Transversal         Pause after meas. 16       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				
Pause after meas. 12       0.0 s       Adjustment Tolerance       Auto         Pause after meas. 13       0.0 s       Adjust volume         Pause after meas. 14       0.0 s       Position       Isocenter         Pause after meas. 15       0.0 s       Orientation       Transversal         Pause after meas. 16       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				
Pause after meas. 13       0.0 s       Adjust volume         Pause after meas. 14       0.0 s       Position       Isocenter         Pause after meas. 15       0.0 s       Orientation       Transversal         Pause after meas. 16       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				
Pause after meas. 14       0.0 s       Position       Isocenter         Pause after meas. 15       0.0 s       Orientation       Transversal         Pause after meas. 16       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				Auto
Pause after meas. 15       0.0 s       Orientation       Transversal         Pause after meas. 16       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				
Pause after meas. 16       0.0 s       Rotation       0.00 deg         Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm				Isocenter
Pause after meas. 17       0.0 s       R >> L       240 mm         Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm			Orientation	Transversal
Pause after meas. 18       0.0 s       A >> P       202 mm         Pause after meas. 19       0.0 s       F >> H       160 mm			Rotation	0.00 deg
Pause after meas. 19 0.0 s F >> H 160 mm			R >> L	•
1 22 11 100 11111			A >> P	
Pause after meas. 20 0.0 s			F >> H	160 mm
	Pause after meas. 20	0.0 s	•	

Physio	
1st Signal/Mode	None
Segments	2
Composing	
Sequence	
Introduction	Off
Dimension Reordering	3D Centric
Contrasts	1
Bandwidth	2264 Hz/Px
Echo spacing	0.5 ms
Turbo factor	40
EPI factor	80
RF pulse type	Normal
Gradient mode	Fast
ASL mode	fASL slice-selective
Pre sat	Off
Post sat	Off
manual LABEL/SAT region	Off
Saturation mode Background Suppr	const 90
BS parameter_1	NOBackgroundsupp 700 ms
BS parameter_2	100 ms
FOCI parameter_0	800
FOCI parameter_1	24
FOCI parameter_2	1.0
FOCI parameter_3	2000
FOCI parameter_4	0.500
Additional scaling factor Distribution Mode	10.0
z-spoiling	Equal equal
Start of time series	1700 ms
Increment time series	100 ms
Length of time series	1
Bolus length	1400 ms
Number of echoes	1

\\USER\Feinberglab\Suhyung\GRASE\grase3d\_reference\_res15

TA: 0:22	Voxel size: 1.5×1.5×1.5		grase3d_tmp
Properties		Table position	0 mm
Prio Recon	Off	Inline Composing	Off
Before measurement	Oli	System	
After measurement		T1	On
Load to viewer	On	M2	On
Inline movie	Off	B4	On
Auto store images	On	M3	On
Load to stamp segments	Off	V32	Off
Load images to graphic	Off		
segments		Positioning mode	REF
Auto open inline display	Off	MSMA	S - C - T
Start measurement without	On	Sagittal	R >> L
further preparation	-	Coronal	A >> P
Wait for user to start	Off	Transversal	F >> H
Start measurements	single	Save uncombined	Off
D #	3 3	Coil Combine Mode	Adaptive Combine
Routine		AutoAlign	
Slab group 1		Auto Coil Select	Default
Slabs	1	Shim mode	Standard
Dist. factor	0 %	Adjust with body coil	Off
Position	Isocenter	Confirm freq. adjustment	Off
Orientation	Transversal	Assume Silicone	Off
Phase enc. dir.	A >> P	? Ref. amplitude 1H	0.000 V
Rotation	0.00 deg	Adjustment Tolerance	Auto
Phase oversampling	0 %	Adjust volume	7.0.10
Slice oversampling	25.0 %	Position	Isocenter
Slices per slab	64	Orientation	Transversal
FoV read	192 mm	Rotation	0.00 deg
FoV phase	100.0 %	R >> L	192 mm
Slice thickness	1.5 mm	A >> P	192 mm
TR	2700 ms	F >> H	96 mm
TE	47.64 ms	l	
Averages	1	Physio	
Concatenations	1	1st Signal/Mode	None
Filter	None PAMO 0:T4	Segments	8
Coil elements	B4;M2,3;T1	Composing	
Contrast			
Flip angle	180 deg	Sequence Sequence	
Fat suppr.	Fat sat.	Introduction	Off
Fat sat. mode	Strong	Dimension	3D
Δ		Reordering	Centric
Averaging mode	Long term	Contrasts	1
Reconstruction	Magnitude	Bandwidth	2298 Hz/Px
Measurements	1	Echo spacing	0.7 ms
Multiple series	Each measurement	Turbo factor	20
Resolution		EPI factor	64
Base resolution	128	RF pulse type	Normal
Phase resolution	100 %	Gradient mode	Fast
Slice resolution	100 %		
Slice partial Fourier	Off	ASL mode	fASL non-selective
Interpolation	Off	Pre sat	Off
		Post sat	Off
Prescan Normalize	Off	manual LABEL/SAT region	Off
Raw filter	Off	Saturation mode	const 90
Geometry		Background Suppr	NOBackgroundsupp
Series	Interleaved	BS parameter_1	700 ms
		BS parameter_2	100 ms
Sat. region 1		FOCI parameter_0	800
Thickness	60 mm	FOCI parameter_1	24
Position	Isocenter	FOCI parameter_2	1.0
Orientation	Transversal	FOCI parameter_3	2000
Special sat.	None	FOCI parameter_4	0.500
Table position	 Н	Additional scaling factor	10.0
		Distribution Mode	Equal

z-spoiling Start of time series equal 1700 ms Increment time series 100 ms Length of time series Bolus length

1400 ms

\\USER\Feinberglab\Suhyung\GRASE\grase3d\_cspf\_ms\_res15\_SH

TA: 2:21	Voxel size: 1.5×1.5×1.5 mm	Rel. SNR: 1.00 USER: gr	ase3d_cspf_SH
Properties		Pause after meas. 21	0.0 s
Prio Recon	Off	<ul><li>Pause after meas. 22</li></ul>	0.0 s
Before measurement	Oli	Pause after meas. 23	0.0 s
After measurement		Pause after meas. 24	0.0 s
Load to viewer	On	Pause after meas. 25	0.0 s
Inline movie	Off	Pause after meas. 26	0.0 s
	On	Pause after meas. 27	0.0 s
Auto store images	Off	Pause after meas. 28	0.0 s
Load to stamp segments  Load images to graphic	Off	Pause after meas. 29	0.0 s
	Oli	Pause after meas. 30	0.0 s
segments	Off	Pause after meas. 31	0.0 s
Auto open inline display Start measurement without	Off On	Multiple series	Each measurement
	On	Resolution	
further preparation Wait for user to start	Off	Base resolution	128
Start measurements	single	Phase resolution	100 %
Start measurements	Single	Slice resolution	100 %
Routine			Off
Slab group 1		<ul><li>Phase partial Fourier</li><li>Slice partial Fourier</li></ul>	Off
Slabs	1	Interpolation	Off
Dist. factor	0 %	interpolation	OII
Position	Isocenter	Prescan Normalize	Off
Orientation	Transversal	Raw filter	Off
Phase enc. dir.	A >> P	Cooperator.	
Rotation	0.00 deg	Geometry	
Phase oversampling	0 %	Series	Interleaved
Slice oversampling	25.0 %	Sat. region 1	
Slices per slab	64	Thickness	60 mm
FoV read	192 mm	Position	Isocenter
FoV phase	100.0 %	Orientation	Transversal
Slice thickness	1.5 mm	Special sat.	None
TR	2200 ms		
TE	47.64 ms	Table position	Н
Averages	1	Table position	0 mm
Concatenations	1	Inline Composing	Off
Filter	None	System	
Coil elements	B4;M2,3;T1	T1	On
Operation		M2	On
Contrast	400 da	-   B4	On
Flip angle	180 deg	M3	On
Fat suppr.	Fat sat.	V32	Off
Fat sat. mode	Strong		
Averaging mode	Long term	Positioning mode	REF
Reconstruction	Magnitude	MSMA	S - C - T
Measurements	32	Sagittal	R >> L
Pause after meas. 1	0.0 s	Coronal	A >> P
Pause after meas. 2	0.0 s	Transversal	F >> H
Pause after meas. 3	0.0 s	Save uncombined	Off
Pause after meas, 4	0.0 s	Coil Combine Mode	Adaptive Combine
Pause after meas. 5	0.0 s	AutoAlign	
Pause after meas. 6	0.0 s	Auto Coil Select	Default
Pause after meas. 7	0.0 s	Shim mode	Standard
Pause after meas. 8	0.0 s	Adjust with body coil	Off
Pause after meas. 9	0.0 s	Confirm freq. adjustment	Off
Pause after meas. 10	0.0 s	Assume Silicone	Off
Pause after meas. 11	0.0 s	? Ref. amplitude 1H	0.000 V
Pause after meas. 12	0.0 s	·	Auto
Pause after meas. 13	0.0 s	Adjustment Tolerance	Auto
Pause after meas. 14	0.0 s	Adjust volume	Isocontor
Pause after meas. 15	0.0 s	Position Orientation	Isocenter
Pause after meas. 16	0.0 s 0.0 s	Orientation	Transversal
Pause after meas. 17	0.0 s	Rotation	0.00 deg
Pause after meas. 17 Pause after meas. 18	0.0 s 0.0 s	R >> L	192 mm
Pause after meas. 19	0.0 s 0.0 s	A >> P	192 mm
Pause after meas. 19 Pause after meas. 20	0.0 s 0.0 s	F >> H	96 mm
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Physio	
1st Signal/Mode	None
Segments	4
Composing	
Sequence	
Introduction	Off
Dimension	3D
Reordering	Centric
Contrasts	1
Bandwidth	2298 Hz/Px
Echo spacing	0.7 ms
Turbo factor	40
EPI factor	64
RF pulse type	Normal
Gradient mode	Fast
ASL mode	fASL slice-selective
Pre sat	Off
Post sat	Off
manual LABEL/SAT region	Off
Saturation mode	const 90
Background Suppr	NOBackgroundsupp
BS parameter_1	700 ms
BS parameter_2	100 ms
FOCI parameter_0	800
FOCI parameter_1	24
FOCI parameter_2	1.0
FOCI parameter_3	2000
FOCI parameter_4	0.500
Additional scaling factor	10.0
Distribution Mode	Equal
z-spoiling Start of time series	equal 1700 ms
Increment time series	100 ms 100 ms
Length of time series	100 ms 1
Bolus length	า 1400 ms
Number of echoes	1400 ms
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