

Protocol: adult\_upperExtremities\_HUMERUS

PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Spin Echo
Coil Configuration	HD 8Ch Body Array by GE	Imaging Options	Seq, EDR, Fast, SS, ARC
Plane	3-PLANE	<b>SCAN RANGE</b>	
Series Description	3-Plane Localizer	FOV	48.0
<b>SCAN TIMING</b>		Slice Thickness	8.0
TE	80.0	Slice Spacing	15.0
Number of Echoes	1	<b>ACQ TIMING</b>	
TR	Minimum	Freq	352
Receiver Bandwidth	83.33	Phase	160
<b>IMAGE ENHANCE</b>		Freq DIR	Unswap
Filter Choice	None	# of Acq. Before Pause	0
<b>GATING/TRIGGER</b>		Phase FOV	1.00
Auto Trigger Type	Off	Auto Shim	Auto
<b>FMRI</b>		Phase Correction	No
PSD Trigger	Internal	<b>USER CVS</b>	
Slice Order	Interleaved	User CV2	240.00
View Order	Bottom/Up	<b>MULTI-PHASE</b>	
# of Repetitions REST	0	Seperate Series	0
# of Repetitions ACTIVE	0	Mask Phase	0
<b>SAT</b>		Mask Pause	0
Tag Type	None	<b>DIFFUSION</b>	
<b>TRICKS</b>		Recon All Images	On
Pause On/Off	On	<b>CONTRAST</b>	
Auto Subtract	0	Contrast Yes/No	No
Auto SCIC	Off		
<b>OTHERS</b>			
Protocol Notes	<p><i>This protocol is built based on Express coil suite. Please select the appropriate coil which is available in your site and optimizing the parameters accordingly.</i></p>		

3-Plane Localizer

3-Plane Localizer

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Ax T1 FSE	<b>PATIENT POSITION</b>		<b>IMAGING PARAMETERS</b>	
	Patient Entry	<i>Feet First</i>	Imaging Mode	<i>2D</i>
	Patient Position	<i>Supine</i>	Pulse Sequence	<i>FSE-XL</i>
	Coil Configuration	<i>HD 8Ch Body Array by GE</i>	Imaging Options	<i>NPW, TRF, Fast, MRF</i>
	Plane	<i>OBLIQUE</i>	<b>SCAN RANGE</b>	
	Series Description	<i>Ax T1 FSE</i>	FOV	<i>16.0</i>
	<b>SCAN TIMING</b>		Slice Thickness	<i>3.5</i>
	Flip Angle	<i>160</i>	Slice Spacing	<i>0.5</i>
	TE	<i>Min Full</i>	<b>ACQ TIMING</b>	
	Number of Echoes	<i>1</i>	Freq	<i>300</i>
	TR	<i>600.0</i>	Phase	<i>200</i>
	Echo Train Length	<i>2</i>	Freq DIR	<i>A/P</i>
	Receiver Bandwidth	<i>22.73</i>	Fat Shift DIR	<i>Normal (A)</i>
	<b>IMAGE ENHANCE</b>		NEX	<i>2.00</i>
	Filter Choice	<i>None</i>	Phase FOV	<i>1.00</i>
	<b>GATING/TRIGGER</b>		Auto Shim	<i>Auto</i>
	Auto Trigger Type	<i>Off</i>	Phase Correction	<i>Yes</i>
	<b>FMRI</b>		<b>USER CVS</b>	
	PSD Trigger	<i>Internal</i>	User CV8	<i>1.00</i>
	Slice Order	<i>Interleaved</i>	TR Min	<i>300.0</i>
	View Order	<i>Bottom/Up</i>	TR Max	<i>750.0</i>
	# of Repetitions REST	<i>0</i>	<b>MULTI-PHASE</b>	
	# of Repetitions ACTIVE	<i>0</i>	Seperate Series	<i>0</i>
	<b>SAT</b>		Mask Phase	<i>0</i>
	Tag Type	<i>None</i>	Mask Pause	<i>0</i>
	<b>TRICKS</b>		<b>DIFFUSION</b>	
	Pause On/Off	<i>On</i>	Recon All Images	<i>On</i>
	Auto Subtract	<i>0</i>	<b>CONTRAST</b>	
Auto SCIC	<i>2</i>	Contrast Yes/No	<i>No</i>	

Ax T1 FSE

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD 8Ch Body Array by GE	Imaging Options	NPW, Seq, Fast, MRF, IrP
Plane	OBLIQUE	<b>SCAN RANGE</b>	
Series Description	AX STIR	FOV	16.0
<b>SCAN TIMING</b>		Slice Thickness	4.0
Flip Angle	180	Slice Spacing	1.0
TE	35.0	<b>ACQ TIMING</b>	
Number of Echoes	1	Freq	288
TR	3091.0	Phase	160
TI	150	Freq DIR	Unswap
Echo Train Length	8	Fat Shift DIR	Normal
Receiver Bandwidth	20.83	NEX	2.00
<b>IMAGE ENHANCE</b>		Phase FOV	1.00
Filter Choice	None	Auto Shim	Auto
<b>GATING/TRIGGER</b>		Phase Correction	No
Auto Trigger Type	Off	<b>USER CVS</b>	
<b>FMRI</b>		User CV22	1.00
PSD Trigger	Internal	TR Min	3000.0
Slice Order	Interleaved	TR Max	6000.0
View Order	Bottom/Up	<b>MULTI-PHASE</b>	
# of Repetitions REST	0	Seperate Series	0
# of Repetitions ACTIVE	0	Mask Phase	0
<b>SAT</b>		Mask Pause	0
Tag Type	None	<b>DIFFUSION</b>	
<b>TRICKS</b>		Recon All Images	On
Pause On/Off	On	<b>CONTRAST</b>	
Auto Subtract	0	Contrast Yes/No	No
Auto SCIC	Off		

AX STIR

AX STIR

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COR T1 FSE	<b>PATIENT POSITION</b>		<b>IMAGING PARAMETERS</b>	
	Patient Entry	<i>Feet First</i>	Imaging Mode	<i>2D</i>
	Patient Position	<i>Supine</i>	Pulse Sequence	<i>FSE-XL</i>
	Coil Configuration	<i>HD 8Ch Body Array by GE</i>	Imaging Options	<i>NPW, TRF, Fast, MRF</i>
	Plane	<i>OBLIQUE</i>	<b>SCAN RANGE</b>	
	Series Description	<i>COR T1 FSE</i>	FOV	<i>38.0</i>
	<b>SCAN TIMING</b>		Slice Thickness	<i>3.0</i>
	Flip Angle	<i>160</i>	Slice Spacing	<i>0.5</i>
	TE	<i>Min Full</i>	<b>ACQ TIMING</b>	
	Number of Echoes	<i>1</i>	Freq	<i>320</i>
	TR	<i>500.0</i>	Phase	<i>224</i>
	Echo Train Length	<i>2</i>	Freq DIR	<i>Unswap</i>
	Receiver Bandwidth	<i>31.25</i>	Fat Shift DIR	<i>Normal</i>
	<b>IMAGE ENHANCE</b>		NEX	<i>2.00</i>
	Filter Choice	<i>None</i>	Phase FOV	<i>1.00</i>
	<b>GATING/TRIGGER</b>		Auto Shim	<i>Auto</i>
	Auto Trigger Type	<i>Off</i>	Phase Correction	<i>No</i>
	<b>FMRI</b>		<b>USER CVS</b>	
	PSD Trigger	<i>Internal</i>	User CV22	<i>1.00</i>
	Slice Order	<i>Interleaved</i>	<b>MULTI-PHASE</b>	
	View Order	<i>Bottom/Up</i>	Seperate Series	<i>0</i>
	# of Repetitions REST	<i>0</i>	Mask Phase	<i>0</i>
	# of Repetitions ACTIVE	<i>0</i>	Mask Pause	<i>0</i>
	<b>SAT</b>		<b>DIFFUSION</b>	
	Tag Type	<i>None</i>	Recon All Images	<i>On</i>
	<b>TRICKS</b>		<b>CONTRAST</b>	
	Pause On/Off	<i>On</i>	Contrast Yes/No	<i>No</i>
	Auto Subtract	<i>0</i>		
Auto SCIC	<i>Off</i>			

COR T1 FSE

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	<i>Feet First</i>	Imaging Mode	<i>2D</i>
Patient Position	<i>Supine</i>	Pulse Sequence	<i>FSE-XL</i>
Coil Configuration	<i>HD 8Ch Body Array by GE</i>	Imaging Options	<i>FC, NPW, Seq, EDR, TRF, Fast, MRF, IrP</i>
Plane	<i>OBLIQUE</i>	PSD Name	<i>frfse-xl</i>
Series Description	<i>COR T2 STIR</i>		
SCAN TIMING		SCAN RANGE	
Flip Angle	<i>160</i>	FOV	<i>24.0</i>
TE	<i>42.0</i>	Slice Thickness	<i>3.0</i>
Number of Echoes	<i>1</i>	Slice Spacing	<i>0.5</i>
TR	<i>3500.0</i>		
TI	<i>150</i>	ACQ TIMING	
Echo Train Length	<i>13</i>	Freq	<i>288</i>
Receiver Bandwidth	<i>31.25</i>	Phase	<i>192</i>
IMAGE ENHANCE		Freq DIR	<i>Swap</i>
Filter Choice	<i>None</i>	Fat Shift DIR	<i>Normal</i>
GATING/TRIGGER		NEX	<i>4.00</i>
Auto Trigger Type	<i>Off</i>	Phase FOV	<i>1.00</i>
FMRI		Auto Shim	<i>Auto</i>
PSD Trigger	<i>Internal</i>	Phase Correction	<i>No</i>
Slice Order	<i>Interleaved</i>	Flow Direction	<i>Freq</i>
View Order	<i>Bottom/Up</i>	Compensation	
# of Repetitions REST	<i>0</i>	USER CVS	
# of Repetitions ACTIVE	<i>0</i>	User CV21	<i>1.00</i>
SAT		User CV22	<i>1.00</i>
SAT Location	<i>S</i>	TR Min	<i>3500.0</i>
SAT Location	<i>I</i>	TR Max	<i>15000.0</i>
Tag Type	<i>None</i>	MULTI-PHASE	
TRICKS		Seperate Series	<i>0</i>
Pause On/Off	<i>On</i>	Mask Phase	<i>0</i>
Auto Subtract	<i>0</i>	Mask Pause	<i>0</i>
Auto SCIC	<i>Off</i>	DIFFUSION	
		Recon All Images	<i>On</i>
		CONTRAST	
		Contrast Yes/No	<i>No</i>

COR T2 STIR

COR T2 STIR

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	<i>Feet First</i>	Imaging Mode	<i>2D</i>
Patient Position	<i>Supine</i>	Pulse Sequence	<i>FSE-XL</i>
Coil Configuration	<i>HD 8Ch Body Array by GE</i>	Imaging Options	<i>NPW, TRF, Fast, MRF</i>
Plane	<i>OBLIQUE</i>	<b>SCAN RANGE</b>	
Series Description	<i>Sag T1 FSE</i>	FOV	<i>38.0</i>
<b>SCAN TIMING</b>		Slice Thickness	<i>3.0</i>
Flip Angle	<i>160</i>	Slice Spacing	<i>0.5</i>
TE	<i>Min Full</i>	<b>ACQ TIMING</b>	
Number of Echoes	<i>1</i>	Freq	<i>320</i>
TR	<i>500.0</i>	Phase	<i>224</i>
Echo Train Length	<i>2</i>	Freq DIR	<i>Unswap</i>
Receiver Bandwidth	<i>31.25</i>	Fat Shift DIR	<i>Normal</i>
<b>IMAGE ENHANCE</b>		NEX	<i>2.00</i>
Filter Choice	<i>None</i>	Phase FOV	<i>1.00</i>
<b>GATING/TRIGGER</b>		Auto Shim	<i>Auto</i>
Auto Trigger Type	<i>Off</i>	Phase Correction	<i>No</i>
<b>FMRI</b>		<b>USER CVS</b>	
PSD Trigger	<i>Internal</i>	User CV22	<i>1.00</i>
Slice Order	<i>Interleaved</i>	<b>MULTI-PHASE</b>	
View Order	<i>Bottom/Up</i>	Seperate Series	<i>0</i>
# of Repetitions REST	<i>0</i>	Mask Phase	<i>0</i>
# of Repetitions ACTIVE	<i>0</i>	Mask Pause	<i>0</i>
<b>SAT</b>		<b>DIFFUSION</b>	
Tag Type	<i>None</i>	Recon All Images	<i>On</i>
<b>TRICKS</b>		<b>CONTRAST</b>	
Pause On/Off	<i>On</i>	Contrast Yes/No	<i>No</i>
Auto Subtract	<i>0</i>		
Auto SCIC	<i>Off</i>		

Sag T1 FSE

Sag T1 FSE

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD 8Ch Body Array by GE	Imaging Options	FC, NPW, Seq, EDR, TRF, Fast, MRF, IrP
Plane	OBLIQUE	PSD Name	frfse-xl
Series Description	SAG T2 STIR		
SCAN TIMING		SCAN RANGE	
Flip Angle	160	FOV	24.0
TE	42.0	Slice Thickness	3.0
Number of Echoes	1	Slice Spacing	0.5
TR	3500.0		
TI	150	ACQ TIMING	
Echo Train Length	13	Freq	288
Receiver Bandwidth	31.25	Phase	192
		Freq DIR	Swap
IMAGE ENHANCE		Fat Shift DIR	Normal
Filter Choice	None	NEX	4.00
		Phase FOV	1.00
GATING/TRIGGER		Auto Shim	Auto
Auto Trigger Type	Off	Phase Correction	No
		Flow Direction Compensation	Freq
FMRI		USER CVS	
PSD Trigger	Internal	User CV21	1.00
Slice Order	Interleaved	User CV22	1.00
View Order	Bottom/Up	TR Min	3500.0
# of Repetitions REST	0	TR Max	15000.0
# of Repetitions ACTIVE	0		
SAT		MULTI-PHASE	
SAT Location	S	Seperate Series	0
SAT Location	I	Mask Phase	0
Tag Type	None	Mask Pause	0
TRICKS		DIFFUSION	
Pause On/Off	On	Recon All Images	On
Auto Subtract	0		
Auto SCIC	Off	CONTRAST	
		Contrast Yes/No	No

SAG T2 STIR

SAG T2 STIR

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<b>PATIENT POSITION</b>		<b>IMAGING PARAMETERS</b>	
Patient Entry	<i>Feet First</i>	Imaging Mode	<i>3D</i>
Patient Position	<i>Supine</i>	Pulse Sequence	<i>SPGR</i>
Plane	<i>AXIAL</i>	Imaging Options	<i>EDR, Fast, ZIP2, Calib</i>
Series Description	<i>---optional contrast---</i>	<b>SCAN RANGE</b>	
<b>SCAN TIMING</b>		FOV	<i>48.0</i>
Number of Echoes	<i>1</i>	Slice Thickness	<i>15.0</i>
Receiver Bandwidth	<i>62.50</i>	Location per Slab	<i>32</i>
<b>IMAGE ENHANCE</b>		Overlap Locations	<i>0</i>
Filter Choice	<i>None</i>	<b>ACQ TIMING</b>	
<b>GATING/TRIGGER</b>		Freq DIR	<i>R/L</i>
Auto Trigger Type	<i>Off</i>	Phase FOV	<i>1.00</i>
<b>FMRI</b>		Auto Shim	<i>Auto</i>
PSD Trigger	<i>Internal</i>	Phase Correction	<i>No</i>
Slice Order	<i>Interleaved</i>	<b>USER CVS</b>	
View Order	<i>Bottom/Up</i>	User CV23	<i>100.00</i>
# of Repetitions REST	<i>0</i>	<b>MULTI-PHASE</b>	
# of Repetitions ACTIVE	<i>0</i>	Seperate Series	<i>0</i>
<b>SAT</b>		Trigger Delay without AV	<i>0</i>
Tag Type	<i>None</i>	Mask Phase	<i>0</i>
<b>TRICKS</b>		Mask Pause	<i>0</i>
Pause On/Off	<i>On</i>	<b>DIFFUSION</b>	
Auto Subtract	<i>0</i>	Recon All Images	<i>On</i>
Auto SCIC	<i>Off</i>	<b>CONTRAST</b>	
		Contrast Yes/No	<i>No</i>



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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD T/R Knee/Foot Coil by Invivo	Imaging Options	TRF, Fast, MRF
Plane	OBLIQUE	SCAN RANGE	
Series Description	+C SAG T1 FS	FOV	16.0
SCAN TIMING		Slice Thickness	4.0
Flip Angle	160	Slice Spacing	0.0
TE	Min Full	ACQ TIMING	
Number of Echoes	1	Freq	320
TR	624.0	Phase	160
Echo Train Length	5	Freq DIR	S/I
Receiver Bandwidth	31.25	Fat Shift DIR	Normal (S)
IMAGE ENHANCE		NEX	2.00
Filter Choice	None	# of Acq. Before Pause	0
GATING/TRIGGER		Phase FOV	1.00
Auto Trigger Type	Off	Auto Shim	Auto
FMRI		Phase Correction	Yes
PSD Trigger	Internal	USER CVS	
Slice Order	Interleaved	User CV8	1.00
View Order	Bottom/Up	User CV19	1.00
# of Repetitions REST	0	User CV22	1.00
# of Repetitions ACTIVE	0	TR Min	350.0
SAT		TR Max	750.0
Tag Type	None	MULTI-PHASE	
Fat/Water Saturation	Fat Classic	Seperate Series	0
TRICKS		Mask Phase	0
Pause On/Off	On	Mask Pause	0
Auto Subtract	0	DIFFUSION	
Auto SCIC	Off	Recon All Images	On
		CONTRAST	
		Contrast Yes/No	No

+C SAG T1 FS

+C SAG T1 FS

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD T/R Knee/Foot Coil by Invivo	Imaging Options	NPW, TRF, Fast, MRF
Plane	OBLIQUE	<b>SCAN RANGE</b>	
Series Description	+C AX T1 FS	FOV	17.0
<b>SCAN TIMING</b>		Slice Thickness	4.0
Flip Angle	160	Slice Spacing	1.0
TE	Min Full	<b>ACQ TIMING</b>	
Number of Echoes	1	Freq	320
TR	740.0	Phase	224
Echo Train Length	3	Freq DIR	S/I
Receiver Bandwidth	31.25	Fat Shift DIR	Normal (I)
<b>IMAGE ENHANCE</b>		NEX	2.00
Filter Choice	None	# of Acq. Before Pause	0
<b>GATING/TRIGGER</b>		Phase FOV	0.70
Auto Trigger Type	Off	Auto Shim	Auto
<b>FMRI</b>		Phase Correction	No
PSD Trigger	Internal	<b>USER CVS</b>	
Slice Order	Interleaved	User CV19	1.00
View Order	Bottom/Up	User CV22	1.00
# of Repetitions REST	0	TR Min	350.0
# of Repetitions ACTIVE	0	TR Max	750.0
<b>SAT</b>		<b>MULTI-PHASE</b>	
Tag Type	None	Seperate Series	0
Fat/Water Saturation	Fat Classic	Mask Phase	0
<b>TRICKS</b>		Mask Pause	0
Pause On/Off	On	<b>DIFFUSION</b>	
Auto Subtract	0	Recon All Images	On
Auto SCIC	Off	<b>CONTRAST</b>	
		Contrast Yes/No	Yes

+C AX T1 FS

+C AX T1 FS

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PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	HD T/R Knee/Foot Coil by Invivo	Imaging Options	NPW, TRF, Fast, MRF
Plane	OBLIQUE	SCAN RANGE	
Series Description	+C COR T1 FS	FOV	16.0
SCAN TIMING		Slice Thickness	4.0
Flip Angle	160	Slice Spacing	0.0
TE	Min Full	ACQ TIMING	
Number of Echoes	1	Freq	320
TR	619.0	Phase	224
Echo Train Length	3	Freq DIR	A/P
Receiver Bandwidth	31.25	Fat Shift DIR	Normal (A)
IMAGE ENHANCE		NEX	2.00
Filter Choice	None	# of Acq. Before Pause	0
GATING/TRIGGER		Phase FOV	0.75
Auto Trigger Type	Off	Auto Shim	Auto
FMRI		Phase Correction	No
PSD Trigger	Internal	USER CVS	
Slice Order	Interleaved	User CV19	1.00
View Order	Bottom/Up	User CV22	1.00
# of Repetitions REST	0	TR Min	350.0
# of Repetitions ACTIVE	0	TR Max	750.0
SAT		MULTI-PHASE	
Tag Type	None	Seperate Series	0
Fat/Water Saturation	Fat	Mask Phase	0
		Mask Pause	0
TRICKS		DIFFUSION	
Pause On/Off	On	Recon All Images	On
Auto Subtract	0	CONTRAST	
Auto SCIC	Off	Contrast Yes/No	Yes

+C COR T1 FS

+C COR T1 FS