



Practicum Team Project Report

Team Name: LATAM

Summary :

This CMR protocol was created with a medical radiologist at the Red Salud Vitacura Clinic, Chile. Its purpose to provide a library of sequences for imaging a large number of cardiac pathologies and allow the technologist to perform the exam when a radiologist is unavailable. This protocol was created as part of the MRI training of the SWiM program and allowed optimization of parameters and knowledge sharing with technologist at other institutions for better understanding of the technique.

Table 1: List of Scanners used by team members at their sites

Scanner	Make	Model	Current Software Version	RF coil
3.0 T	General Electric	Architect	DV29.1	MP Coil Medium 21 ch

Table of Contents of the CMR Scan parameter protocols complied for the scanner (43 pages)

Seceunce	Slice Thkicness	Spacing	N° slices	Ph matrix	Freq matrix	Freq FoV	Phase FoV	BW
3 plane								
pI FIESTA 2C	8 mm	0	1	200	200	40 cm	1	111
pI FIESTA 4C	8 mm	0	1	200	200	40 cm	1	111
pI FIESTA S.A	8 mm	0	1	200	200	40 cm	1	111
AX FIESTA ANATOMIC	8 mm	0	20	200	200	42 cm	0,85	111
SA T2 TIR	8 mm	0	3	224	160	40 cm	1	62,5
SA FIESTA CINE	8 mm	0	12	200	200	40 cm	0,9	111
SA T2 MAP	8 mm	0	3	144	144	42	1	83,3
SA T1 MAP NATIVE	8 mm	0	3	160	132	38	1	90
PERFUSION (MoCo)	8 mm	0	3	132	132	44	1	62,5
FIESTA 2Ch CINE	8 mm	0	3	200	200	40	1	111
FIESTA 4Ch CINE	8 mm	0	3	200	200	40	1	111
FIESTA 3Ch TSVI CINE	8 mm	0	3	200	200	40	1	111
SA CINE IR 6 min	8 mm	0	1	96	64	44	1	111
SA PSMDE 8 min	8 mm	0	12	220	220	44	0.9	111
4Ch PSMDE	8 mm	0	3	220	220	44	0.9	35,71

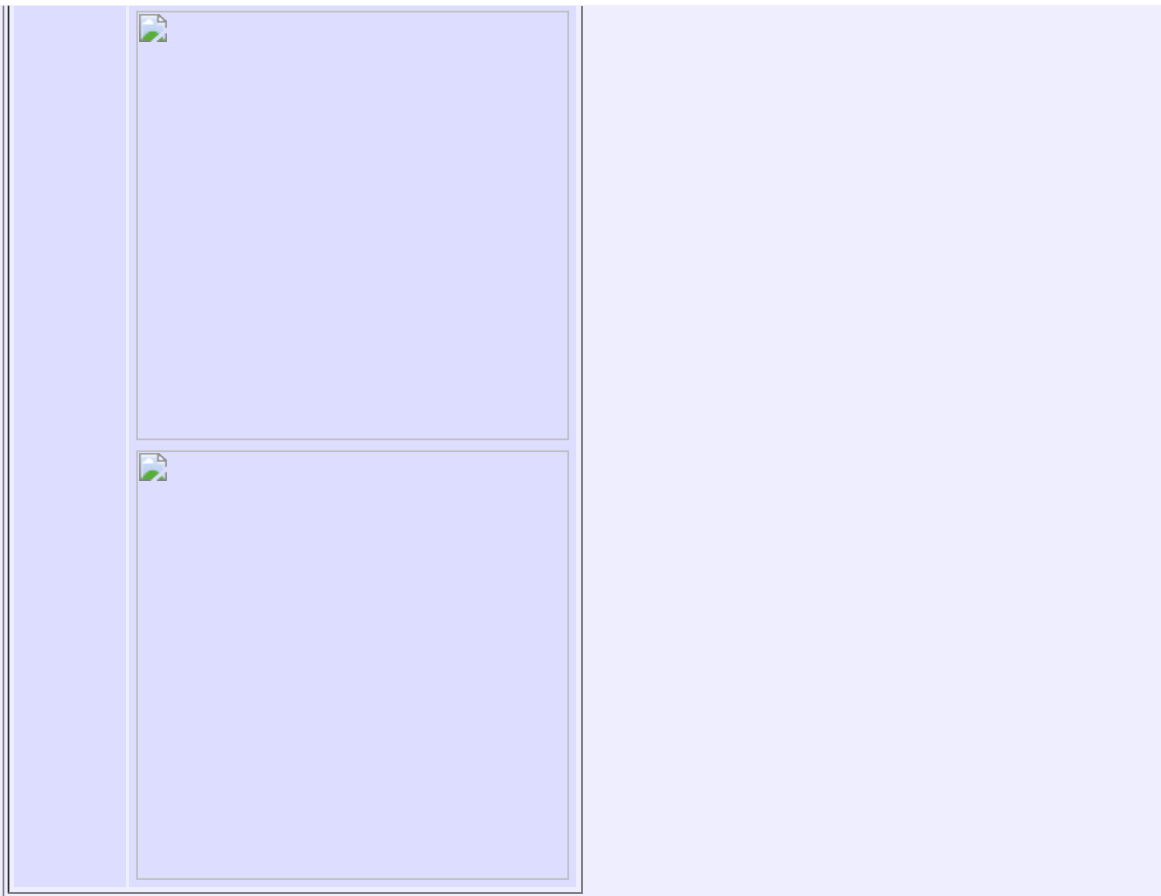
2Ch PSMDE	8 mm	0	3	220	220	44	0,9	35,71
3Ch PSMDE	8 mm	0	3	220	220	44	1	35,71
SA T1 MAP Gd	8 mm	0	3	160	132	38	1	90
Phase Contrast Aortic Flow	8 mm	0	3	188	188	36	0,75	62,50

Protocol: adult_chest_1.- RM CARDIO ESTANDAR 2022


3-Plane Localizer			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Spin Echo
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Seq, EDR, Fast, SS, FR, ARC
Plane	3-PLANE	Phase	2.00
Series Description	3-Plane Localizer		
SCAN TIMING		SCAN RANGE	
TE	80.0	FOV	48.0
Number of Echoes	1	Slice Thickness	8.00
TR	Minimum	Slice Spacing	5.0
Receiver Bandwidth	83.33	Overlap Locations	0
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	384
		Phase	160
		Freq DIR	Unswap
		# of Acq. Before Pause	0
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Preset
		Excitation Mode	Selective
USER CVS		FMRI	
User CV1	1.00	PSD Trigger	Internal
User CV2	240.00	View Order	Bottom/Up
User CV13	1.00	# of Repetitions REST	0
User CV Mask2	0	# of Repetitions ACTIVE	0
MULTI-PHASE		SAT	
Seperate Series	0	Tag Type	None
Mask Phase	0		
Mask Pause	0		
Preserve	0		
DIFFUSION		TRICKS	
Recon All Images	On	Pause On/Off	On
# Synthetic b-values	1	Auto Subtract	0
Synthetic b-value	1000.0;	Auto SCIC	Off
CONTRAST			
Contrast Yes/No	No		

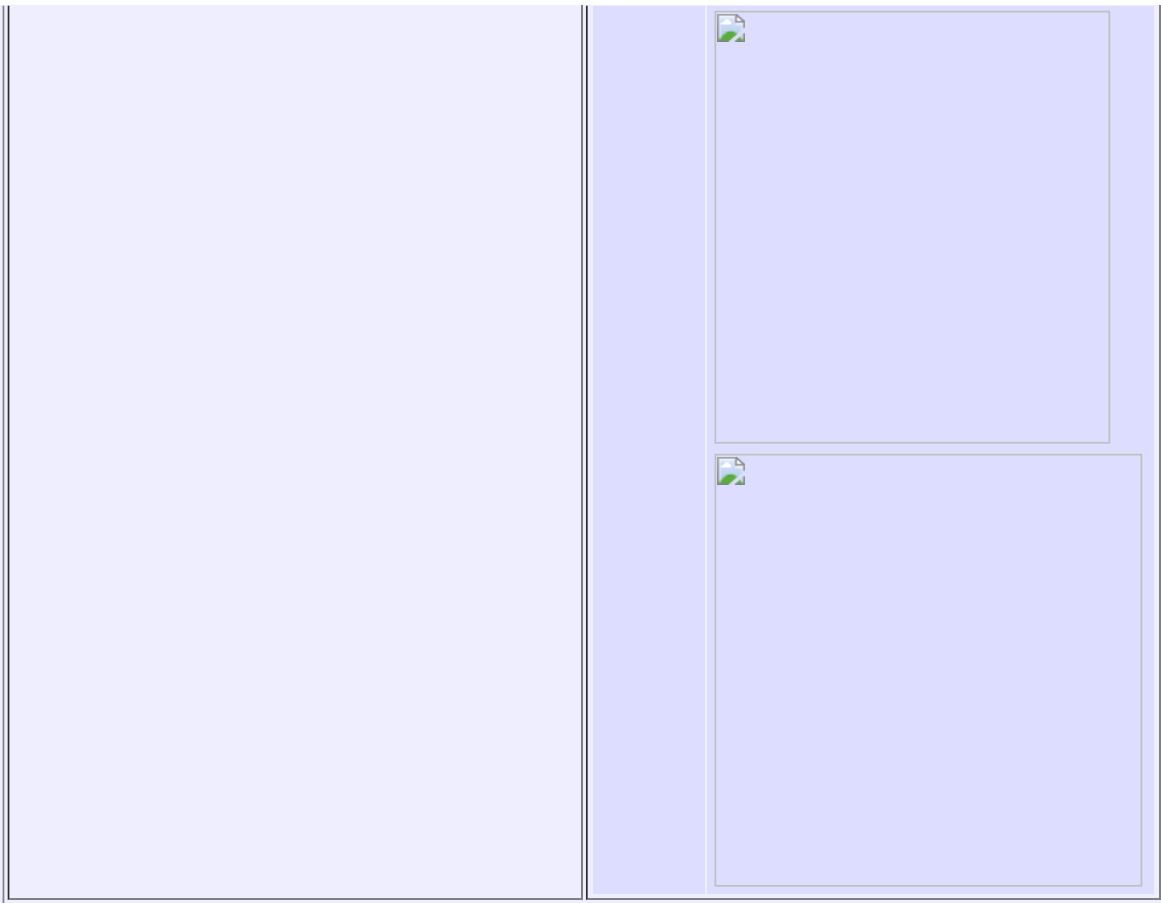
Ax FIESTA ANATOMICO	
PATIENT POSITION	IMAGING PARAMETERS

Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Seq, EDR, Fast, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	Ax FIESTA ANATOMICO		
SCAN TIMING		SCAN RANGE	
Flip Angle	45	FOV	42.0
TE	Min Full	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	23
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	152
		Phase	152
		Freq DIR	R/L
		NEX	1.00
		# of Acq. Before Pause	0
		Phase FOV	0.85
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Pause After Navigator Prescan	0	User CV20	1.00
		User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
Pause On/Off	On	Contrast Yes/No	No
Auto Subtract	0		
Auto SCIC	2		
OTHERS			
Protocol Notes	Estudio anatomico Axial Estricto: sobre callao aortico cubriendo todo el corazon,dejando un corte bajo el apex. TR menos a 3.5ms, modificable a travez de FOV y Bandwidth (BW) Uso de BW lo más alto posible Siempre corregir Shim para disminuir artefacto Banding y activar Localizer TG SIEMPRE ABRIR VENTANA CARDIAC		




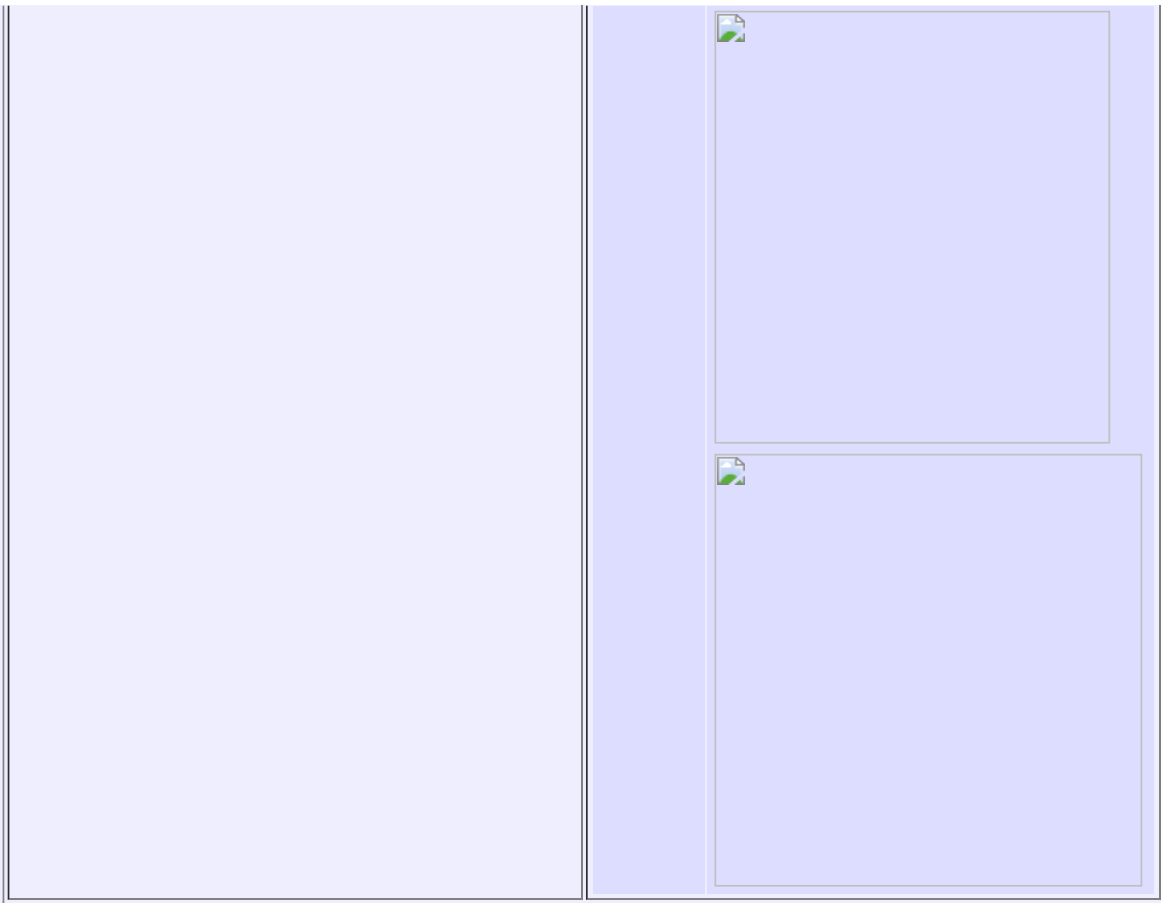
3pl FIESTA 2C Cine BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	3pl FIESTA 2C Cine BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	40.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	0
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective

GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	14	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
Pause On/Off	On	# of Cardiac Phases to Reconstruct	30
Auto Subtract	0		
Auto SCIC	2		
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	<p>IMPORTANT TIPS: -Make sure that Temp Res is around 50ms . The higher the HR, the lower the value of Temp Res should be.</p>  <p>- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.</p> <p>---Wrong FOV rotation ----- Correct FOV rotation --</p>



3pl FIESTA 4C Cine BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	3pl FIESTA 4C Cine BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	40.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	1
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	R/L
		NEX	1.00
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective

GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	14	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
Pause On/Off	On	# of Cardiac Phases to Reconstruct	30
Auto Subtract	0		
Auto SCIC	2		
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	<p>IMPORTANT TIPS: -Make sure that Temp Res is around 50ms . The higher the HR, the lower the value of Temp Res should be.</p>  <p>- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.</p> <p>---Wrong FOV rotation ----- Correct FOV rotation --</p>



3pl FIESTA EC Cine BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	3pl FIESTA EC Cine BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	44.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	1
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	S/I
		NEX	1.00
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective

GATING/TRIGGER Trigger Type 5 Views per Segment 14 Pause After Navigator Prescan 0		USER CVS User CV0 1.00 User CV20 1.00 User CV Mask2 512	
FMRI PSD Trigger Internal View Order Bottom/Up # of Repetitions REST 0 # of Repetitions ACTIVE 0		MULTI-PHASE Seperate Series 0 Mask Phase 0 Mask Pause 0 Preserve 0	
SAT Tag Type None		DIFFUSION Recon All Images On # Synthetic b-values 1 Synthetic b-value 1000.0;	
TRICKS Pause On/Off On Auto Subtract 0 Auto SCIC 2		CINE # of Cardiac Phases to Reconstruct 30	
CONTRAST Contrast Yes/No No		OTHERS Protocol Notes IMPORTANT TIPS: - EJE CORTO, PLANIFICAR EN DOS CAMARAS Y CUATRO CAMARAS. - ABARCAR DESDE SOBRE EL PLANO VALVULAR HASTA EL APEX. <div>   </div> <p>- Asegurarse que la resolución temporal se encuentre cercana a 50 ms . The higher the HR, the lower the value of Temp Res should be.</p>	



- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.

---Wrong FOV rotation -----
Correct FOV rotation --



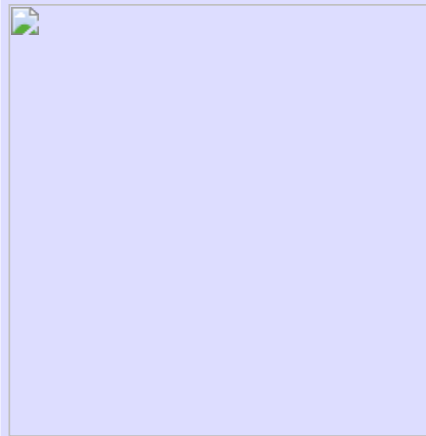
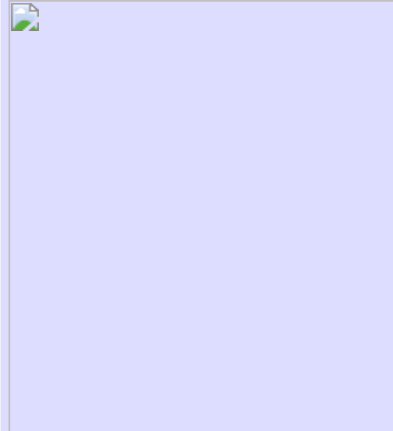
3 pl FIESTA 3C TSVI Cine BH

PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	3 pl FIESTA 3C TSVI Cine BH		


SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	44.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	0
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	14	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		Multi b-values	1000.0;
		Multi NEX Values	1.0;
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
Pause On/Off	On	# of Cardiac Phases to Reconstruct	30
Auto Subtract	0		
Auto SCIC	2		
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	<p>IMPORTANT TIPS: -Make sure that Temp Res is around 50ms . The higher the HR, the lower the value of Temp Res should be.</p>  <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <p>- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of</p>

unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.

---Wrong FOV rotation -----
Correct FOV rotation --



EC T2 TIR BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, BSP, ARC, IrP
Plane	OBLIQUE	PSD Name	FSE-XL
Series Description	EC T2 TIR BH	Phase	2.00
SCAN TIMING		SCAN RANGE	
Flip Angle	140	FOV	40.0
TE	70.0	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	10.0
TI	210	Overlap Locations	0
Echo Train Length	18	Number of Slices	3
Blood Suppression TI	1036		

Receiver Bandwidth	62.50	
IMAGE ENHANCE		ACQ TIMING
Filter Choice	None	Freq 224
		Phase 160
		Freq DIR S/I
		Fat Shift DIR Normal (S)
		NEX 1.00
		# of Acq. Before Pause 1
		Phase FOV 1.00
		Auto Shim Auto
		Phase Correction No
		RF Drive Mode Quadrature (CP)
		Excitation Mode Selective
GATING/TRIGGER		USER CVS
Trigger Type	5	User CV14 2.50
Minimum Trigger Delay	4	User CV Mask2 512
Cardiac Phase	1	
Cardiac Slices	1	
FMRI		MULTI-PHASE
PSD Trigger	Internal	Seperate Series 0
View Order	Bottom/Up	Mask Phase 0
# of Repetitions REST	0	Mask Pause 0
# of Repetitions ACTIVE	0	Preserve 0
SAT		DIFFUSION
Tag Type	None	Recon All Images On
		# Synthetic b-values 1
		Synthetic b-value 1000.0;
TRICKS		CONTRAST
# of RR Intervals	2	Contrast Yes/No No
Trigger Delay	1500	
Pause On/Off	On	
Auto Subtract	0	
Auto SCIC	2	
OTHERS		
Protocol Notes	<p>IMPORTANT TIPS: EJE CORTO, 5 CORTES. 2 CORTES BASALES 3 AL RESTO LA CAMARA. 10 mm/10mm</p>  <p>EN CASOS DE ARTEFACTO EN LA IMAGEN UTILIZAR DIR EN ULTIMA INSTANCIA REALIZAR</p>	

CINE EJE CORTO POST GADO.



IMAGEN DE ADQUISICION TIR.
TIPS: -use Diastolic Trigger Delay -
change CV14 from 2.0 to 1.25-1.5 if
blood signal is not properly nulled.

--MAPAS--


PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	32Ch Body by GE	Imaging Options	Seq, Fast, RealTime
Plane	AXIAL		
Series Description	--MAPAS--		
SCAN TIMING		SCAN RANGE	
Flip Angle	45	FOV	40.0
TE	Min Full	Slice Thickness	8.0
Receiver Bandwidth	62.50	Slice Spacing	0.0
		Number of Slices	1
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	128
		Phase	96
		Freq DIR	R/L
		NEX	1.00
		Phase FOV	0.80
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Auto Trigger Type	Off	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	0
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
Slice Order	Interleaved	Mask Phase	0
View Order	Bottom/Up	Mask Pause	0
# of Repetitions REST	0		
# of Repetitions ACTIVE	0		
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On

		Multi b-values	1000.0;
		Multi NEX Values	1;
TRICKS		CONTRAST	
Pause On/Off	On	Contrast Yes/No	No
Auto Subtract	0		
Auto SCIC	Off		

EC T2Map BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	T2MAP
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, BSP, ARC
Plane	OBLIQUE	Phase	2.50
Series Description	EC T2Map BH		
SCAN TIMING		SCAN RANGE	
Number of Echoes	4	FOV	42.0
Echo Train Length	20	Slice Thickness	8.00
Blood Suppression TI	418	Slice Spacing	15.0
Receiver Bandwidth	83.33	Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	144
		Phase	144
		Freq DIR	S/I
		Fat Shift DIR	Normal (I)
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV1	110.00
Minimum Trigger Delay	4	User CV14	2.50
Cardiac Phase	1	User CV Mask2	0
Cardiac Slices	1		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1

		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
# of RR Intervals	1	Contrast Yes/No	No
Trigger Delay	500		
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	Off		
OTHERS			
Protocol Notes	IMPORTANT TIPS: - NO REALIZAR CON GADOLINIO - EJE CORTO, 3 CORTES PUNTA, MEDIO Y BASE DEL CORAZON. - se prefiere trigger delay en diastole - El numero d eintervalos RR es tipicamente 1, pero puede ser necesario "2" en casos de frecuencias altas. -En casos de presentarse error en trigger delay tenemos 2 opciones : 1.- Fijar frecuencia cardiaca en Project HR con el valor promedio de la frecuencia del paciente. 2.- Escribir en Trigger Delay el numero recomendado por el equipo. - Advanced tab: CV1 --> valor recomendado es aproximadamente 100-110ms CV14 --> valor recomendado para eje corto es 2.5 para eje corto.		

EC MOLLI NATIVO			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	T1MAP-FIESTA
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, ARC, IrP, MOCO
Plane	OBLIQUE	Phase	2.50
Series Description	EC MOLLI NATIVO		
SCAN TIMING		SCAN RANGE	
Flip Angle	35	FOV	38.0
Number of Echoes	1	Slice Thickness	8.00
TI	142	Slice Spacing	15.0
Receiver Bandwidth	90.91	Overlap Locations	0
		Number of Slices	4

IMAGE ENHANCE		ACQ TIMING	
Filter Choice	D	Freq	160
		Phase	132
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV20	1.50
Minimum Trigger Delay	4	User CV23	80.00
Cardiac Phase	1	User CV24	53.00
Cardiac Slices	1	User CV25	3.00
Pause After Navigator Prescan	0	User CV Mask2	0
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
DIFFUSION		TRICKS	
Recon All Images	On	# of RR Intervals	1
# Synthetic b-values	1	Trigger Delay	1000
Synthetic b-value	1000.0;	Pause On/Off	On
		Auto Subtract	0
		Auto SCIC	Off
CONTRAST		OTHERS	
Contrast Yes/No	No	<p>IMPORTANT TIPS: EJE CORTO, 3 CORTES BASE, MEDIO, PUNTA. ADQUISICION PRE CONTRASTE PERMITE EVALUAR FIBROSIS DIFUSA, AUMENTO ESPACIO EXTRACELULAR Y EDEMA. Configuraciòn advance:</p>	
		Protocol Notes	 <div style="border: 1px solid black; height: 80px; width: 100%;"></div>
		<p>CV 24 ---> 53.00 CV 25 ---> 3.00 EN CASOS DE ARRITMIA: CV 24 ---> 51.00 CV 25 ---> 1.00</p>	

--GADO--	
PATIENT POSITION	IMAGING PARAMETERS
Patient Entry	Feet First
Patient Position	Supine
	Imaging Mode
	2D
	Pulse Sequence
	Fiesta

Coil Configuration	32Ch Body by GE	Imaging Options	Seq, Fast, RealTime
Plane	AXIAL		
Series Description	--GADO--		
SCAN TIMING		SCAN RANGE	
Flip Angle	45	FOV	40.0
TE	Min Full	Slice Thickness	8.0
Receiver Bandwidth	62.50	Slice Spacing	0.0
		Number of Slices	1
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	128
		Phase	96
		Freq DIR	R/L
		NEX	1.00
		Phase FOV	0.80
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Auto Trigger Type	Off	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	0
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
Slice Order	Interleaved	Mask Phase	0
View Order	Bottom/Up	Mask Pause	0
# of Repetitions REST	0		
# of Repetitions ACTIVE	0		
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		Multi b-values	1000.0;
		Multi NEX Values	1;
TRICKS		CONTRAST	
Pause On/Off	On	Contrast Yes/No	No
Auto Subtract	0		
Auto SCIC	Off		

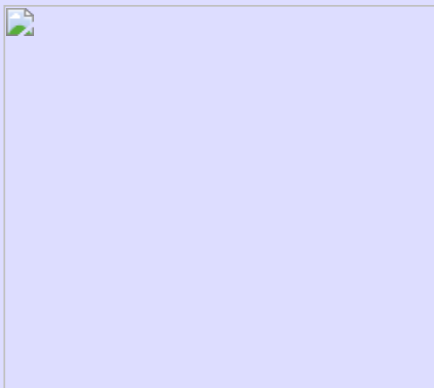

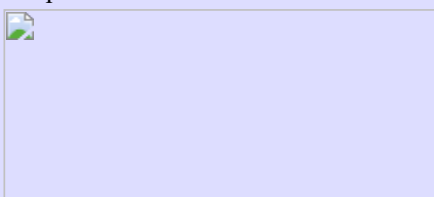
PERFUSION (MoCo)			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	SPGR
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, EDR, Fast, MPh, Asset, SrP, MOCO
Plane	OBLIQUE	Phase	2.00
Series Description	PERFUSION (MoCo)		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	44.0
TE	Min Full	Slice Thickness	10.00

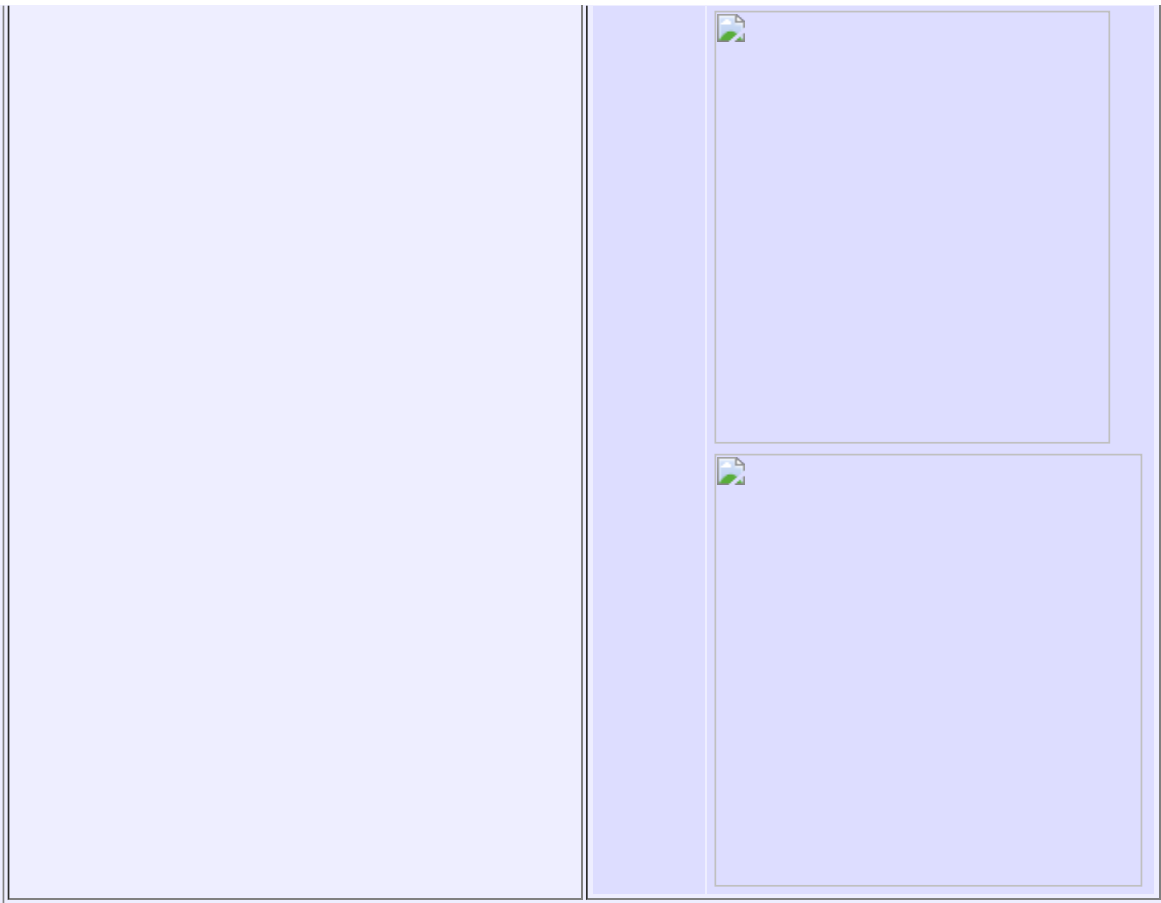
Number of Echoes	1	Slice Spacing	15.0
TI	227	Overlap Locations	0
Receiver Bandwidth	62.50	Number of Slices	3
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	132
		Phase	132
		Freq DIR	S/I
		NEX	0.75
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV16	1.00
Cardiac Phase	1	User CV20	1.00
Cardiac Slices	1	User CV Mask2	512
Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Slice per Location	70
View Order	Bottom/Up	Seperate Series	0
# of Repetitions REST	0	Mask Phase	0
# of Repetitions ACTIVE	0	Mask Pause	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
# of RR Intervals	1	Contrast Yes/No	No
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	2		
OTHERS			
Protocol Notes	<p>IMPORTANT TIPS: -Multi-plane is supported when UserCV 16, Prep Pulse , is set to 1. To add slices in different planes, use [Shift] + click to deposit the desired slices, up to the Max # Slices shown on the screen.</p> <div style="border: 1px solid black; height: 60px; width: 250px; margin: 10px 0;"></div> <p>- If the highest frame rate is desired, change # RR Interval to 1 . Max # Slices will decrease accordingly. - if FGRE TC is used during stress conditions , # RR interval = 1 is preferred. Please reduce the number</p>		

od slices accordingly.




FIESTA EC Cine BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	FIESTA EC Cine BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	44.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	15
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	14	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
Pause On/Off	On	# of Cardiac Phases to Reconstruct	30
Auto Subtract	0		


Auto SCIC	2	
CONTRAST		OTHERS
Contrast Yes/No	No	<div data-bbox="813 157 1378 346"> Protocol Notes <p>IMPORTANT TIPS: - EJE CORTO, PLANIFICAR EN DOS CAMARAS Y CUATRO CAMARAS. - ABARCAR DESDE SOBRE EL PLANO VALVULAR HASTA EL APEX. 10mm/0mm</p> </div> <div data-bbox="938 346 1370 730">  </div> <div data-bbox="938 730 1370 1115">  </div> <div data-bbox="938 1115 1370 1249"> <p>- Asegurarse que la resolución temporal se encuentre cercana a 50 ms . The higher the HR, the lower the value of Temp Res should be.</p> </div> <div data-bbox="938 1249 1370 1444">  </div> <div data-bbox="938 1444 1370 2018"> <p>- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.</p> <p>---Wrong FOV rotation ----- Correct FOV rotation --</p> </div>



CineIR 6 MINUTOS			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	CINE IR
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset, IrP
Plane	OBLIQUE	Phase	1.25
Series Description	CineIR 6 MINUTOS		
SCAN TIMING		SCAN RANGE	
Flip Angle	5	FOV	40.0
TE	Min Full	Slice Thickness	10.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	35.71	Overlap Locations	0
		Number of Slices	1
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	96
		Phase	64
		Freq DIR	Unswap
		NEX	1.00
		Phase FOV	0.95
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective

GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Cardiac Phase	1	User CV20	1.00
Cardiac Slices	1	User CV Mask2	0
Views per Segment	12		
Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
# of RR Intervals	2	# of Cardiac Phases to Reconstruct	30
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	Off		
CONTRAST		OTHERS	
Contrast Yes/No	No	<p>IMPORTANT TIPS: -When scanning 2D MDE, use the same #RR for both the CINE IR and the 2D MDE scans. - For low HR < 55 BPM, use #RR = 1 for CINE IR and MDE. - Pick optimal TI (Prep Time) with nulled (=dark) normal myocardium. Beware the " bounce point artifact " indicating that TI is too short . This artifact looks like a black outline along the endo/epicardial borders.</p>	
		Protocol Notes 	
		<p>- now Cine IR supports # RR interval up to 4.</p>	

EC PSMDE 8 MIN			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Gradient Echo
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, EDR, Fast, PS, Asset, IrP
Plane	OBLIQUE	Phase	2.00
Series Description	EC PSMDE 8 MIN		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	44.0
TI	391	Slice Thickness	8.00

Receiver Bandwidth	35.71	Slice Spacing	0.0
		Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	220
		Phase	218
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	0
		Phase FOV	0.90
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Preset
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV Mask2	0
Minimum Trigger Delay	4		
Cardiac Phase	1		
Cardiac Slices	1		
Views per Segment	24		
Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
# of RR Intervals	2	Contrast Yes/No	No
Trigger Delay	1000		
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	Off		
OTHERS			
Protocol Notes	<p>IMPORTANT TIPS: - When scanning PSMDE, # RR interval for CINE IR must match #RR interval for PSMDE. - For optimal image quality, set the Trigger Delay to Diastolic or type in a value manually.</p> <div>  </div> <p>- Increase TI by 20-25ms after every 5min to account for wash-out over time.</p>		

- Ensure Temp Res is <200ms. For HR>100BPM, Temp Res should be <160ms.





T1 MOLLI GD 10 MIN EC

PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	T1MAP-FIESTA
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, ARC, IrP, MOCO
Plane	OBLIQUE	Phase	2.50
Series Description	T1 MOLLI GD 10 MIN EC		
SCAN TIMING		SCAN RANGE	
Flip Angle	50	FOV	44.0
Number of Echoes	1	Slice Thickness	10.00
TI	156	Slice Spacing	15.0
Receiver Bandwidth	90.91	Overlap Locations	0
		Number of Slices	3
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	D	Freq	160
		Phase	132
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV20	1.50
Minimum Trigger Delay	4	User CV23	80.00
Cardiac Phase	1	User CV24	432.00
Cardiac Slices	1	User CV25	1.00
Pause After Navigator Prescan	0	User CV Mask2	0
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
DIFFUSION		TRICKS	



Recon All Images	On	# of RR Intervals	1
Multi b-values	1000.0;	Trigger Delay	1000
Multi NEX Values	1.0;	Pause On/Off	On
# Synthetic b-values	1	Auto Subtract	0
Synthetic b-value	1000.0;	Auto SCIC	Off
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	<p>IMPORTANT TIPS: EJE CORTO, 3 CORTES BASE, MEDIO, PUNTA.</p> <p>ADQUISICION POST CONTRASTE 10 MINUTOS. - Use the Heartbeat Pattern (CV24) set to 432 when performing MOLLI post contrast. 4(1s)3(1s)2 will acquire 9 images in 11 heartbeats with 3 inversions. This sampling strategy may improve the accuracy for the lower range of T1s associated with the use of gadolinium contrast agents (200-600ms), as well as improve the measurement precision for short T1.</p>

4C PSMDE			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Gradient Echo
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, EDR, Fast, PS, Asset, IrP
Plane	OBLIQUE	Phase	2.00
Series Description	4C PSMDE		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	44.0
Number of Echoes	1	Slice Thickness	8.00
TI	391	Slice Spacing	0.0
Receiver Bandwidth	35.71	Overlap Locations	0
		Number of Slices	3
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	220
		Phase	218
		Freq DIR	R/L
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	0.90
		Auto Shim	Auto
		Phase Correction	No



		RF Drive Mode	Preset
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV Mask2	0
Minimum Trigger Delay	4		
Cardiac Phase	1		
Cardiac Slices	1		
Views per Segment	24		
Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
# of RR Intervals	2	Contrast Yes/No	No
Trigger Delay	1000		
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	Off		
OTHERS			
Protocol Notes	<p>IMPORTANT TIPS: - When scanning PSMDE, # RR interval for CINE IR must match #RR interval for PSMDE. - For optimal image quality, set the Trigger Delay to Diastolic or type in a value manually.</p>		
			
	<p>- Increase TI by 20-25ms after every 5min to account for wash-out over time. - Ensure Temp Res is <200ms. For HR>100BPM, Temp Res should be <160ms.</p> 		

2C PSMDE			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D


Patient Position	Supine	Pulse Sequence	Gradient Echo
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, EDR, Fast, PS, Asset, IrP
Plane	OBLIQUE	Phase	2.00
Series Description	2C PSMDE		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	44.0
Number of Echoes	1	Slice Thickness	8.00
TI	391	Slice Spacing	0.0
Receiver Bandwidth	35.71	Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	220
		Phase	218
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	0
		Phase FOV	0.90
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Preset
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV Mask2	0
Minimum Trigger Delay	4		
Cardiac Phase	1		
Cardiac Slices	1		
Views per Segment	24		
Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
DIFFUSION		TRICKS	
Recon All Images	On	# of RR Intervals	2
# Synthetic b-values	1	Trigger Delay	1000
Synthetic b-value	1000.0;	Pause On/Off	On
		Auto Subtract	0
		Auto SCIC	Off
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	IMPORTANT TIPS: - When scanning PSMDE, # RR interval for CINE IR must match #RR interval for PSMDE. - For optimal image quality, set the Trigger Delay to Diastolic or type in a value manually.

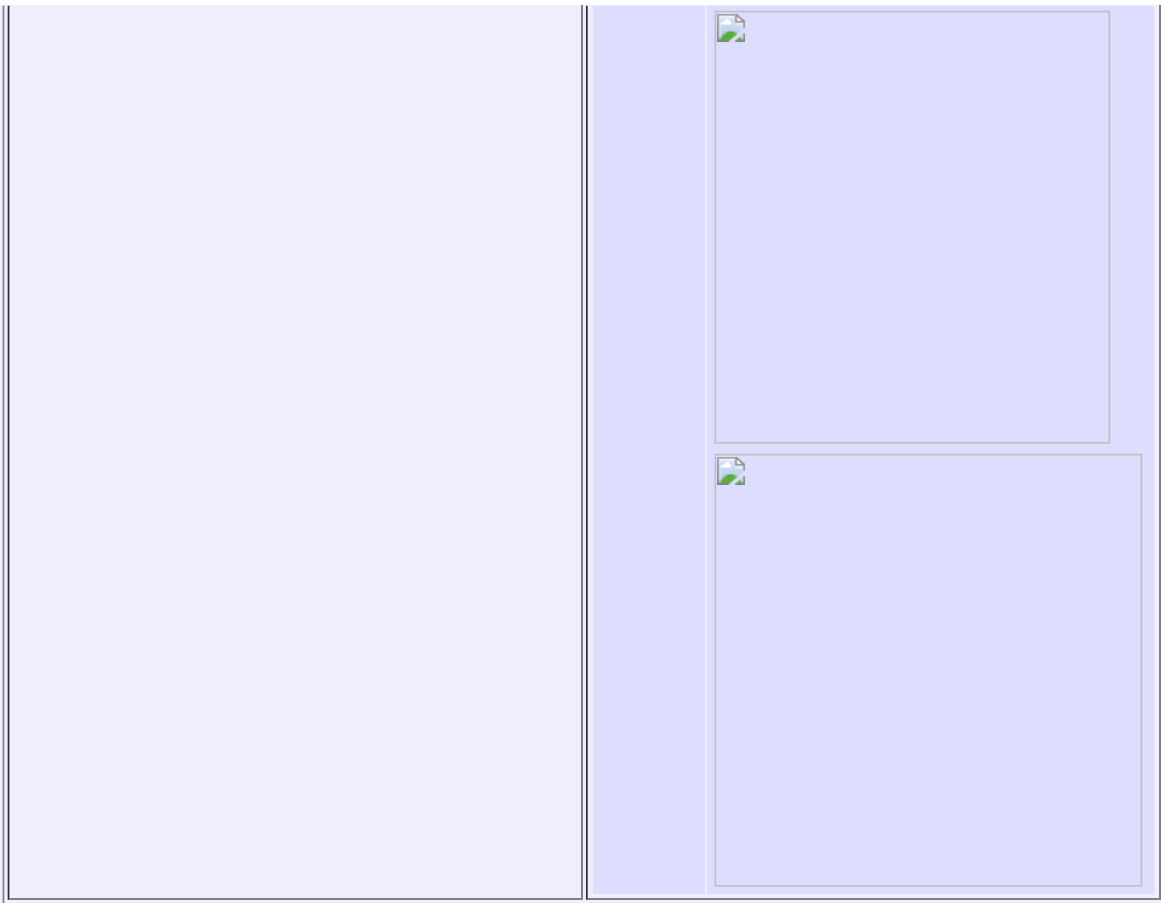
	 <p>- Increase TI by 20-25ms after every 5min to account for wash-out over time. - Ensure Temp Res is <200ms. For HR>100BPM, Temp Res should be <160ms.</p> 
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3C PSMDE			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Gradient Echo
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, EDR, Fast, PS, Asset, IrP
Plane	OBLIQUE	Phase	2.00
Series Description	3C PSMDE		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	44.0
Number of Echoes	1	Slice Thickness	8.00
TI	420	Slice Spacing	0.0
Receiver Bandwidth	35.71	Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	220
		Phase	218
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Preset
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV Mask2	0
Minimum Trigger Delay	4		
Cardiac Phase	1		
Cardiac Slices	1		
Views per Segment	24		
Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	


PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
DIFFUSION		TRICKS	
Recon All Images	On	# of RR Intervals	2
# Synthetic b-values	1	Trigger Delay	1000
Synthetic b-value	1000.0;	Pause On/Off	On
		Auto Subtract	0
		Auto SCIC	Off
CONTRAST		OTHERS	
Contrast Yes/No	No	<p>IMPORTANT TIPS: - When scanning PSMDE, # RR interval for CINE IR must match #RR interval for PSMDE. - For optimal image quality, set the Trigger Delay to Diastolic or type in a value manually.</p>  <p>Protocol Notes</p> <ul style="list-style-type: none"> - Increase TI by 20-25ms after every 5min to account for wash-out over time. - Ensure Temp Res is <200ms. For HR>100BPM, Temp Res should be <160ms. 	

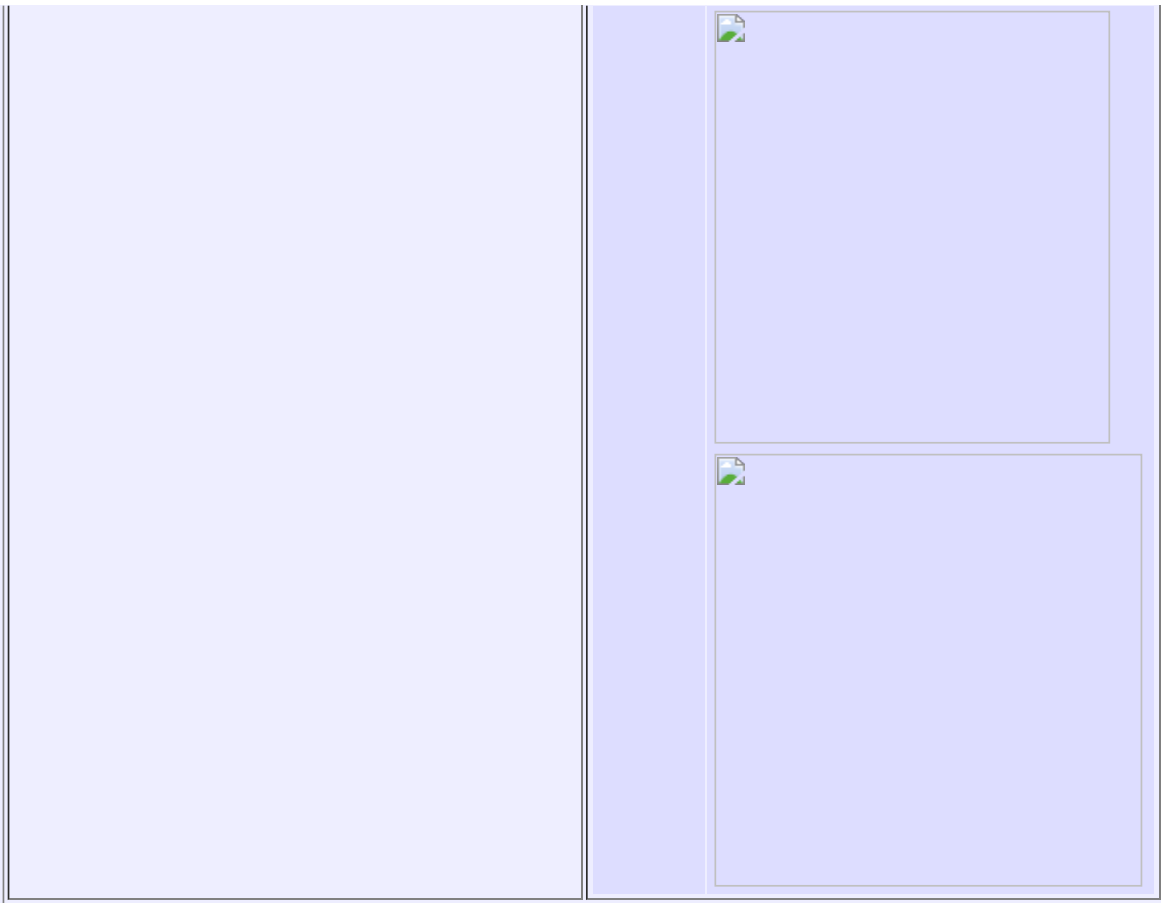
FIESTA 2C Cine BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	FIESTA 2C Cine BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	40.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	S/I

		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	14	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
Pause On/Off	On	# of Cardiac Phases to Reconstruct	30
Auto Subtract	0		
Auto SCIC	2		
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	<p>IMPORTANT TIPS: -Make sure that Temp Res is around 50ms . The higher the HR, the lower the value of Temp Res should be.</p>  <p>- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.</p> <p>---Wrong FOV rotation ----- Correct FOV rotation --</p>




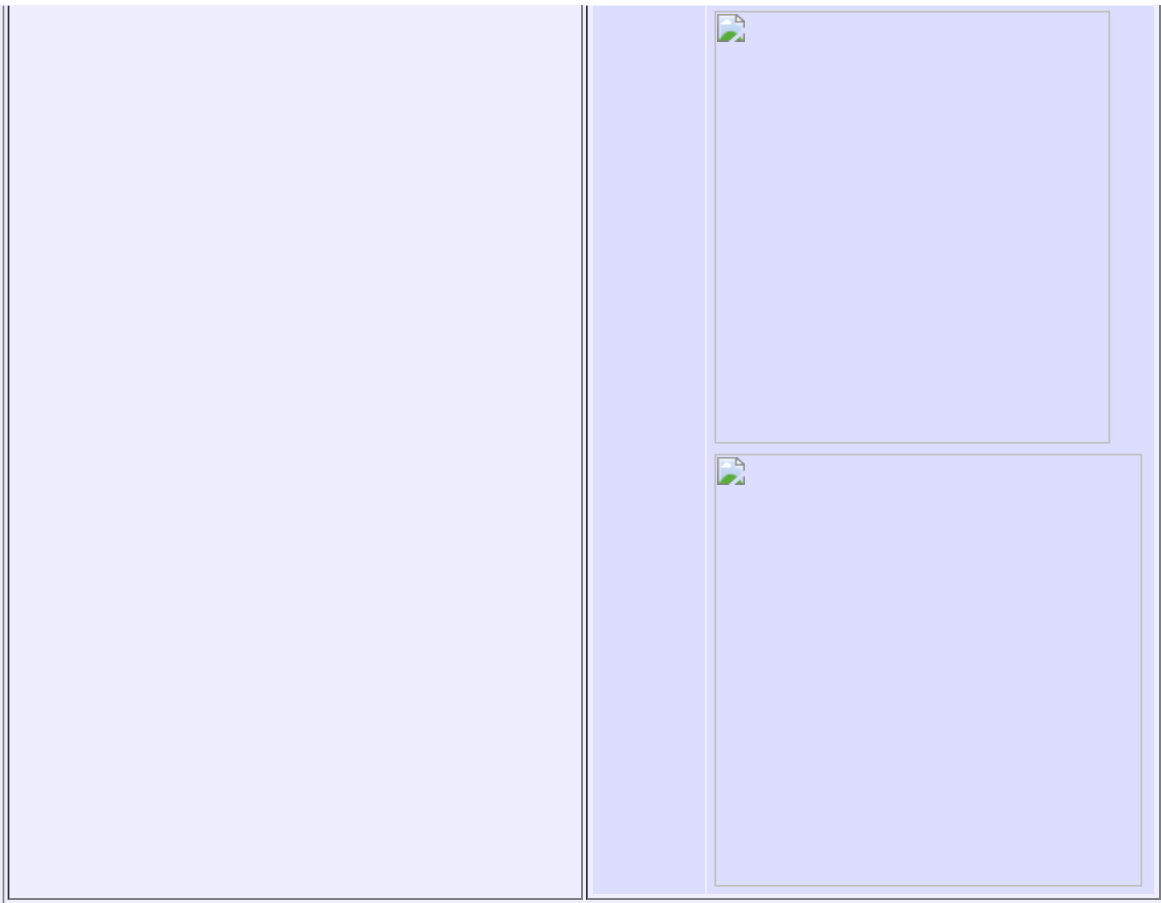
FIESTA 4C Cine BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	FIESTA 4C Cine BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	40.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	3
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	R/L
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective

GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	14	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
Pause On/Off	On	# of Cardiac Phases to Reconstruct	30
Auto Subtract	0		
Auto SCIC	2		
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	<p>IMPORTANT TIPS: -Make sure that Temp Res is around 50ms . The higher the HR, the lower the value of Temp Res should be.</p>  <p>- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.</p> <p>---Wrong FOV rotation ----- Correct FOV rotation --</p>



FIESTA 3C TSVI Cine BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, ZIP512, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	FIESTA 3C TSVI Cine BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	49	FOV	44.0
TE	Minimum	Slice Thickness	8.00
Number of Echoes	1	Slice Spacing	0.0
Receiver Bandwidth	111.11	Overlap Locations	0
		Number of Slices	4
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	B	Freq	200
		Phase	200
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective


GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	14	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	512
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CINE	
Pause On/Off	On	# of Cardiac Phases to Reconstruct	30
Auto Subtract	0		
Auto SCIC	2		
CONTRAST		OTHERS	
Contrast Yes/No	No	Protocol Notes	<p>IMPORTANT TIPS: -Make sure that Temp Res is around 50ms . The higher the HR, the lower the value of Temp Res should be.</p>  <p>- To adjust the Temp Res, change VPS accordingly. Decreasing VPS will decrease Temp Res. - In case of unsuccessful FIESTA CINE scan due to very arrhythmic heartbeat, use Real Time FIESTA ungated sequence. - In case the image comes out rotated, Duplicate & Setup the series, then select the series from the Graphic Rx Toolbar to bring up the image you just scanned, zoom out to visualize the full FOV, and rotate the FOV box as shown below to orient the box parallel to the chest wall.</p> <p>---Wrong FOV rotation ----- Correct FOV rotation --</p>

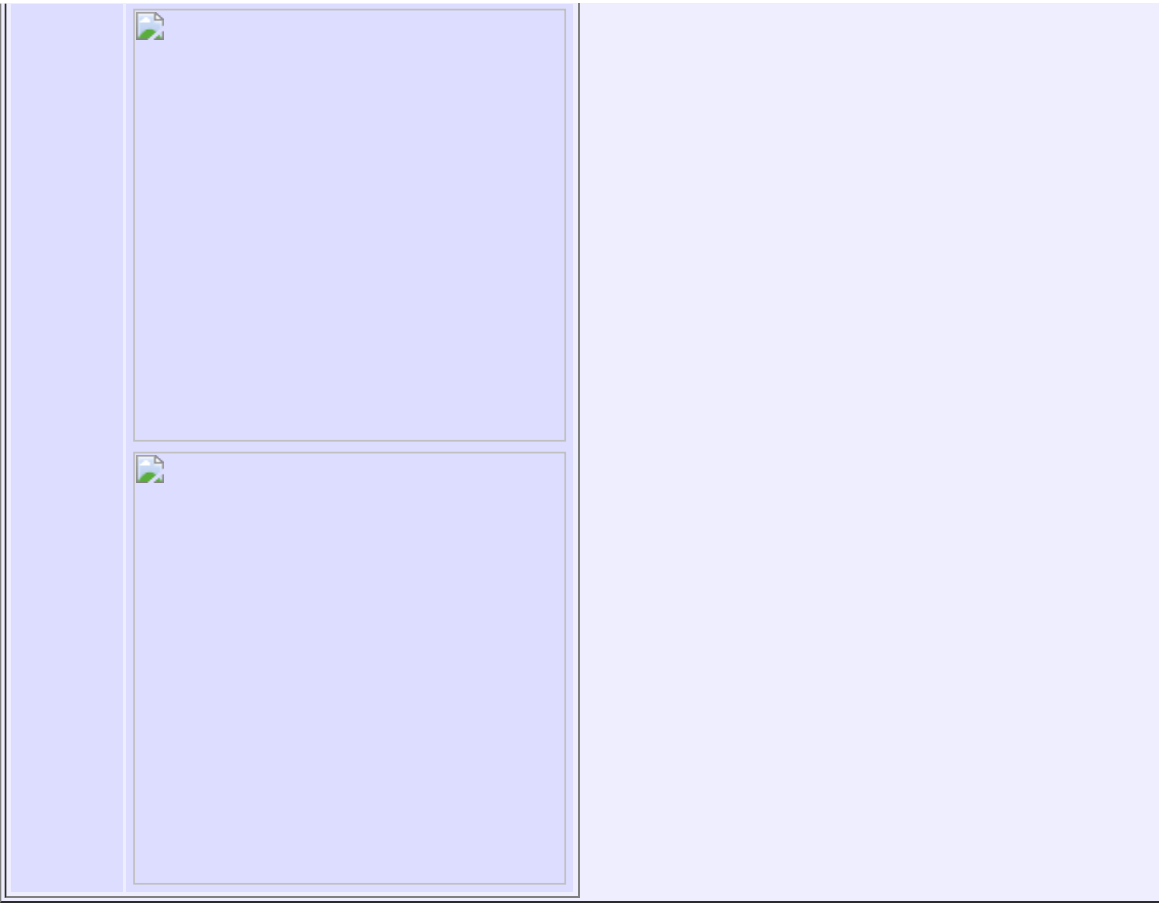


--FLUJO--			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	32Ch Body by GE	Imaging Options	Seq, Fast, RealTime
Plane	AXIAL		
Series Description	--FLUJO--		
SCAN TIMING		SCAN RANGE	
Flip Angle	45	FOV	40.0
TE	Min Full	Slice Thickness	8.0
Receiver Bandwidth	62.50	Slice Spacing	0.0
		Number of Slices	1
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	128
		Phase	96
		Freq DIR	R/L
		NEX	1.00
		Phase FOV	0.80
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Auto Trigger Type	Off	User CV20	1.00
		User CV Mask2	0

Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
Slice Order	Interleaved	Mask Phase	0
View Order	Bottom/Up	Mask Pause	0
# of Repetitions REST	0		
# of Repetitions ACTIVE	0		
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		Multi b-values	1000.0;
		Multi NEX Values	1;
TRICKS		CONTRAST	
Pause On/Off	On	Contrast Yes/No	No
Auto Subtract	0		
Auto SCIC	Off		

VALV AO ANATOMIC PC			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Vasc PC
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	FC, Gat, Seq, EDR, Fast, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	VALV AO ANATOMIC PC		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	36.0
Number of Echoes	1	Slice Thickness	8.00
Receiver Bandwidth	62.50	Slice Spacing	0.0
		Overlap Locations	0
		Number of Slices	3
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	188
		Phase	188
		Freq DIR	R/L
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	0.75
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	4	User CV20	1.00
Pause After Navigator Prescan	0	User CV21	1.00
		User CV Mask2	0

FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		VASCULAR	
Tag Type	None	Flow Analysis	Slice
		Additional Flow Images	0
		Flow Recon Type	Phase Diff.
		Velocity Encoding	150.0
DIFFUSION		TRICKS	
Recon All Images	On	Pause On/Off	On
# Synthetic b-values	1	Auto Subtract	0
Synthetic b-value	1000.0;	Auto SCIC	Off
CINE		CONTRAST	
# of Cardiac Phases to Reconstruct	30	Contrast Yes/No	No
OTHERS			
Protocol Notes	IMPORTANT TIPS: 3 CORTES, VISUALIZACIÓN DE LA ANTOMIA VALVULAR. NO MIDE FLUJO. PUEDE SER REEMPLAZADO POR FIESTA CINE A LA VALVULA.		
	<div></div>		



2D Fast PC BH Ao			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Vasc PC
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	FC, Gat, Seq, EDR, Fast, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	2D Fast PC BH Ao		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	36.0
Number of Echoes	1	Slice Thickness	8.00
Receiver Bandwidth	62.50	Slice Spacing	0.0
		Overlap Locations	0
		Number of Slices	3
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	188
		Phase	188
		Freq DIR	R/L
		NEX	1.00

		# of Acq. Before Pause	1
		Phase FOV	0.75
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV0	1.00
Views per Segment	4	User CV20	1.00
Pause After Navigator Prescan	0	User CV21	1.00
		User CV Mask2	0
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		VASCULAR	
Tag Type	None	Flow Analysis	Slice
		Additional Flow Images	0
		Flow Recon Type	Phase Diff.
		Velocity Encoding	150.0
DIFFUSION		TRICKS	
Recon All Images	On	Pause On/Off	On
# Synthetic b-values	1	Auto Subtract	0
Synthetic b-value	1000.0;	Auto SCIC	Off
CINE		CONTRAST	
# of Cardiac Phases to Reconstruct	30	Contrast Yes/No	No
OTHERS			
Protocol	IMPORTANT TIPS: - VENC 150 - ESTUDIO DE FLUJO AORTICO,		
Notes	MIDE FLUJO. - PLANIFICACIÓN POR SOBRE LA UNIÓN SINOTUBULAR, 5 mm SOBRE LA UNIÓN, UTILIZANDO PLANO 3 CAMARAS Y CORONAL DE AORTA. - 3 CORTES - SE DEBE VISUALIZAR AORTA EN FORMA CIRCULAR.		




- For HR<70 BPM , Temp Res should be < 72ms . - For HR>70 BPM , Temp Res should be < 50ms .

- Change Views Per Segment to adjust Temp Res. - Advanced Tab : the following settings are preferred.


--OPCIONAL--			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Fiesta
Coil Configuration	32Ch Body by GE	Imaging Options	Seq, Fast, RealTime
Plane	AXIAL		
Series Description	--OPCIONAL--		
SCAN TIMING		SCAN RANGE	
Flip Angle	45	FOV	40.0
TE	Min Full	Slice Thickness	8.0
Receiver Bandwidth	62.50	Slice Spacing	0.0
		Number of Slices	1
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	128

		Phase	96
		Freq DIR	R/L
		NEX	1.00
		Phase FOV	0.80
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Auto Trigger Type	Off	User CV20	1.00
Pause After Navigator Prescan	0	User CV Mask2	0
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
Slice Order	Interleaved	Mask Phase	0
View Order	Bottom/Up	Mask Pause	0
# of Repetitions REST	0		
# of Repetitions ACTIVE	0		
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		Multi b-values	1000.0;
		Multi NEX Values	1;
TRICKS		CONTRAST	
Pause On/Off	On	Contrast Yes/No	No
Auto Subtract	0		
Auto SCIC	Off		

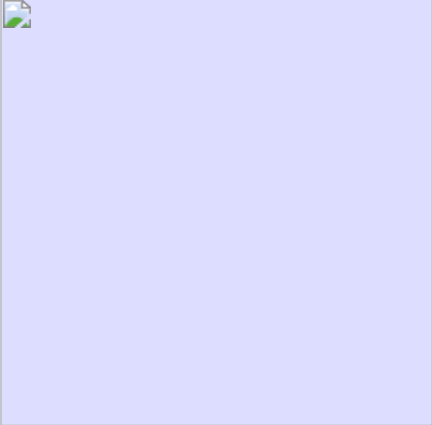
PD SSFSE BB ANATOMICO			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Spin Echo
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, SS, BSP, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	PD SSFSE BB ANATOMICO		
SCAN TIMING		SCAN RANGE	
TE	Minimum	FOV	42.0
Number of Echoes	1	Slice Thickness	8.00
Blood Suppression TI	849	Slice Spacing	0.0
Receiver Bandwidth	83.33	Overlap Locations	0
		Number of Slices	22
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	180
		Phase	160
		Freq DIR	R/L
		# of Acq. Before Pause	5
		Phase FOV	0.85
		Auto Shim	Auto

		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV2	240.00
Minimum Trigger Delay	4	User CV13	1.00
Cardiac Phase	1	User CV Mask2	512
Cardiac Slices	1		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
		Multi b-values	1000.0;
		Multi NEX Values	1.0;
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
# of RR Intervals	3	Contrast Yes/No	No
Trigger Delay	1500		
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	2		
OTHERS			
Protocol Notes			
	<p>IMPORTANT TIPS: Secuencia Sangre Negra Planificacion: AXIAL ESTRICTO, misma cobertura de Ax FIESTA TX Echo Spacing menor a 5ms Siempre corregir Shim para disminuir artefacto Banding y activar Localizer TG SIEMPRE ABRIR VENTANA CARDIAC -Make sure that Trigger Delay is set to Diastolic from the pull down menu, as cardiac motion is reduced. - If # RR Interval =2, then Trigger Delay = Recommend is best option.</p>		

EC T2 DIR FS BH			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	FSE-XL
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, BSP, ARC
Plane	OBLIQUE	Phase	2.00
Series Description	EC T2 DIR FS BH		
SCAN TIMING		SCAN RANGE	
Flip Angle	140	FOV	38.0
TE	90.0	Slice Thickness	10.00
Number of Echoes	1	Slice Spacing	15.0
TI	164	Overlap Locations	0
Echo Train Length	22	Number of Slices	3
Blood Suppression TI	688		
Receiver Bandwidth	83.33		
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	256
		Phase	200
		Freq DIR	S/I
		Fat Shift DIR	Normal (I)
		NEX	1.00
		# of Acq. Before Pause	1
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV14	2.50
Minimum Trigger Delay	4	User CV19	1.00
Cardiac Phase	1	User CV Mask2	512
Cardiac Slices	1		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
Fat/Water Saturation	Fat Special	# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
# of RR Intervals	2	Contrast Yes/No	No
Trigger Delay	1500		
Pause On/Off	On		

Auto Subtract	0	
Auto SCIC	2	
OTHERS		
Protocol Notes	<p>IMPORTANT TIPS: T2 EJE CORTO SANGRE NEGRA FS Estudio para Edema</p>  <p>-use Diastolic Trigger Delay - EN CASOS DE DIFICULTAD PARA MANTENER APNEAS: ADQUIRIR CINE EJE CORTO POST GADOLINIO. - change CV14 from 2.0 to 1.25-1.5 if blood signal is not properly nulled. - if Black Blood imaging is performed after contrast injection, BSP TI needs to be adjusted manually.</p>	

T2 EC SSFSE FS rapido			
PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	Spin Echo
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, Seq, EDR, Fast, SS, BSP, Asset
Plane	OBLIQUE	Phase	2.00
Series Description	T2 EC SSFSE FS rapido		
SCAN TIMING		SCAN RANGE	
TE	Minimum	FOV	44.0
Number of Echoes	1	Slice Thickness	8.00
TI	170	Slice Spacing	0.0
Blood Suppression TI	938	Overlap Locations	0
Receiver Bandwidth	111.11	Number of Slices	14
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	192
		Phase	180
		Freq DIR	S/I
		# of Acq. Before Pause	3
		Phase FOV	1.00
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)

		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV2	240.00
Minimum Trigger Delay	4	User CV13	1.00
Cardiac Phase	1	User CV Mask2	512
Cardiac Slices	1		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
SAT		DIFFUSION	
Tag Type	None	Recon All Images	On
Fat/Water Saturation	Fat Special	Multi b-values	1000.0;
		Multi NEX Values	1.0;
		# Synthetic b-values	1
		Synthetic b-value	1000.0;
TRICKS		CONTRAST	
# of RR Intervals	4	Contrast Yes/No	No
Trigger Delay	1500		
Pause On/Off	On		
Auto Subtract	0		
Auto SCIC	2		
OTHERS			
Protocol Notes	<p>IMPORTANT TIPS: T2 EJE CORTO SANGRE NEGRA FS Abarcar todo el ventriculo izquierdo, un corte sobre el plano valvular hasta el apex. Estudio para Edema Limite TR =1000ms A mayor TR eff mejor TI para saturar sangre # RR maneja TR</p> 		
	<p>-Make sure that Trigger Delay is set to Diastolic from the pull down menu, as cardiac motion is reduced. - If # RR Interval =2, then Trigger Delay = Recommend is best option.</p>		

PATIENT POSITION		IMAGING PARAMETERS	
Patient Entry	Feet First	Imaging Mode	2D
Patient Position	Supine	Pulse Sequence	SPGR
Coil Configuration	GE21chFlexL;GE40chGEMPA	Imaging Options	Gat, EDR, Fast, PS, ARC, IrP
Plane	OBLIQUE	Phase	2.50
Series Description	EC PSMDE RAPIDO		
SCAN TIMING		SCAN RANGE	
Flip Angle	20	FOV	44.0
Number of Echoes	1	Slice Thickness	8.00
Receiver Bandwidth	50.00	Slice Spacing	0.0
		Overlap Locations	0
		Number of Slices	14
IMAGE ENHANCE		ACQ TIMING	
Filter Choice	None	Freq	132
		Phase	128
		Freq DIR	S/I
		NEX	1.00
		# of Acq. Before Pause	7
		Phase FOV	0.90
		Auto Shim	Auto
		Phase Correction	No
		RF Drive Mode	Quadrature (CP)
		Excitation Mode	Selective
GATING/TRIGGER		USER CVS	
Trigger Type	5	User CV Mask2	0
Minimum Trigger Delay	4		
Cardiac Phase	1		
Cardiac Slices	1		
Pause After Navigator Prescan	0		
FMRI		MULTI-PHASE	
PSD Trigger	Internal	Seperate Series	0
View Order	Bottom/Up	Mask Phase	0
# of Repetitions REST	0	Mask Pause	0
# of Repetitions ACTIVE	0	Preserve	0
DIFFUSION		TRICKS	
Recon All Images	On	# of RR Intervals	2
Multi b-values	1000.0;	Trigger Delay	429
Multi NEX Values	1.0;	Pause On/Off	On
# Synthetic b-values	1	Auto Subtract	0
Synthetic b-value	1000.0;	Auto SCIC	Off
CINE		CONTRAST	
# of Cardiac Phases to Reconstruct	20	Contrast Yes/No	No
OTHERS			
Protocol Notes	IMPORTANT TIPS: - When scanning PSMDE, # RR interval for CINE IR		

must match #RR interval for PSMDE. -
For optimal image quality, set the
Trigger Delay to Diastolic or type in a
value manually.



- Increase TI by 20-25ms after every 5min to account for wash-out over time.
- Ensure Temp Res is <200ms. For HR>100BPM, Temp Res should be <160ms.

