14T MRSI – protocol (created 20072021_061221_09122021)

date:	SCAN	GROUP	BDL

study name	

weight: 170 g

study	TAIL_PRONE
	1H-Qsurf_Rat (phase 90)
	MRI_TxSuc
	Time of start: 12:26

FROM: MRSI_Coronal_09122021

1_Localizer 1 **Adj:** wobble (setup, stop)

E4 → Acquire localizer for position with **basic frequency/MR scan in the instruction cart**
fix the rat

2_Localizer 2 **Adj: ref power (Gauss 6 kHz, 2mm slice top of the brain)** power= 0,0225 W

E6 → Acquire with **automatic instructions → to have a shim before the next power adj**

*Target power for MRSI: New coil conf (phase 0) - 0.05-0.06 W
Coil config trad (phase 90) =0.02-0.03 W

Loc MS **3_Localizer multislice_10_short** – for voxel and ellipsoid

E8 **Adj:** Ref power (Gauss 6 kHz, 2mm slice top of the brain) power: 0,0226 W
Seq: 1 avg, 10 slices, Image size: 256x256, **FOV: 24x24** → position the slices
→ Acquire with **automatic instructions**

T2 turbo rare **4_T2 turbo rare for voxel position AXIAL (T2 turbo rare_6_54K)**
Seq: 2 avg, DS=4, Rare factor: 6, encoding start -1 (in resolution/encoding), 256x256, 20 slices, 0 gap, FOV=24x24
Position the slices, current shim
No = E10 → Automatic acquistion

5_T2 turbo rare for voxel position CORONAL (T2 turbo rare_6_54K)
Adj: B0 map (settings are already saved) B0 map No: E900001
Seq: 2 avg, DS=4, Rare factor: 6, encoding start -1 (in resolution/encoding), 256x256, 20 slices, 0 gap
Position the slices +**FOV =24x24** as MRSI
Mapshim – elliptical 13.8x8x15, no iterative corr
No = E12 → Automatic acquistion
Create a mapshim report **SD values:** 105,3 Hz → 33,3 Hz

STEAM **6_STEAM_highres_JM_1109202_water_MRSI_01022021 (1st one)**
Adj: power calibration at the level of hippo (voxel)
position voxel - 10 x 2 x 10 mm Vox size= 10 x 2x 10 mm
Seq: 16 avg, 1 rep, offset 0, no WS, 2 DS, TE=3, TM=10, TR=4 position= 0,001 x -2,7 15 x 0,698
OVS (15/12mm, gap=0.3mmm), **spoilers 15-25-35%,** ref scan 16, **Seq spoilers : 25-30-20%** power = 0,0327 W
Current shim
No = E15 → Automatic acquistion →topspin/tick in Reconstr. lw = 24,589 Hz
Save shim (no matter the lw always save the first shim)

7_STEAM_highres_JM_1109202_water_MRSI_01022021 – for shimming
Adj: B0 map (settings ate already saved) B0 map No: E900002
Map shim on the voxel: cuboid, no margin, iterative corrections
No = E17 → Automatic acquistion lw = 24,589 → 28,324 Hz

No = →If necessary repeat acq: Bo map and map shim Final lw = 24,589 Hz
*Option: loc. Freq and loc shim in the ins. Cart - loc. Shim doesn't work for a big vox Save shim

Optional: **8_STEAM_highres_JM_11092020_ water_MRSI_01022021**
1 repetition with 32 averages, ref scan 16, OVS on
WS ON : WS pulses 84/150 → If you change the WS note it here:
TE= 3ms TM=10 ms TR= 4s
No = → Automatic acquistion + Current shim

FID-MRSI **9_CSI_fid_FOVsat_WS_coronal_07122020**

Copy Slice orientation from Coronal RARE (scan **5**)
Adjust the slice ofsett - Middle coordinate of the VOI Position
Adjust the position of saturation bands –**always perpendicular**
Use both Axial and Coronal RARE acq as support
FOV = 24x24 , flip angle = 52, Dummy scans = 8
Linear encoding, start at -1, -1
weighted acquisition / standard acquisition – Always standard with 1 avg.

Matrix size= 31 x 31
Coronal Slice position: 8 - 9

Preparation/WS - VAPOR
Launch in the **setup mode** to find optimal WS and BW of the pulses (test also with 8x8 matrix)

WS flip angles = 84/150	BW = 660 Hz

*For the flip angles 84/150 and BW=660 works best so start with those
Number of averages: 1
Number of repetitions: 1

No= E20 → Automatic acquisition + current shim - **metabolites**
Duplicate sequence - preparation/WS -none
No= E21 → Automatic acquisition + current shim - **water**

E 22 : Linewidth check with 6_STEAM : lw = 23, 242 Hz

If you repeat with other parameters

1st repeat **FID - MRSI**
weighted acquisition / standard acquistion - circle the one you select
Preparation/WS – VAPOR

Averages: 2	Repetitions: 1

No= E23 → Automatic acquistion + current shim – **metabolies**
No= E24 → Automatic acquistion + current shim – **water**

E 25 : Linewidth check : lw = 25, 146 Hz

2nd repeat **FID - MRSI**
weighted acquisition / standard acquistion - circle the one you select (After 2 hours)
Preparation/WS - VAPOR

Averages = 1	Repetitions= 1

No= 26 → Automatic acquistion + current shim - **metabolies**
No= 27 → Automatic acquistion + current shim - **water**

E 29 : Linewidth check : lw = 25, 659 Hz

CENTER THE MRSI SLICE ON THE CORONAL IMAGE

E 30 : 2 avg - Met after 2 hours

E 31 : 2 avg - Wat after 2 hours

E 32 : Linewidth check : lw = 26, 589 Hz

E 33 : 1 avg - Met after 4 hours

E 34 : 1 avg - Wat after 4 hours