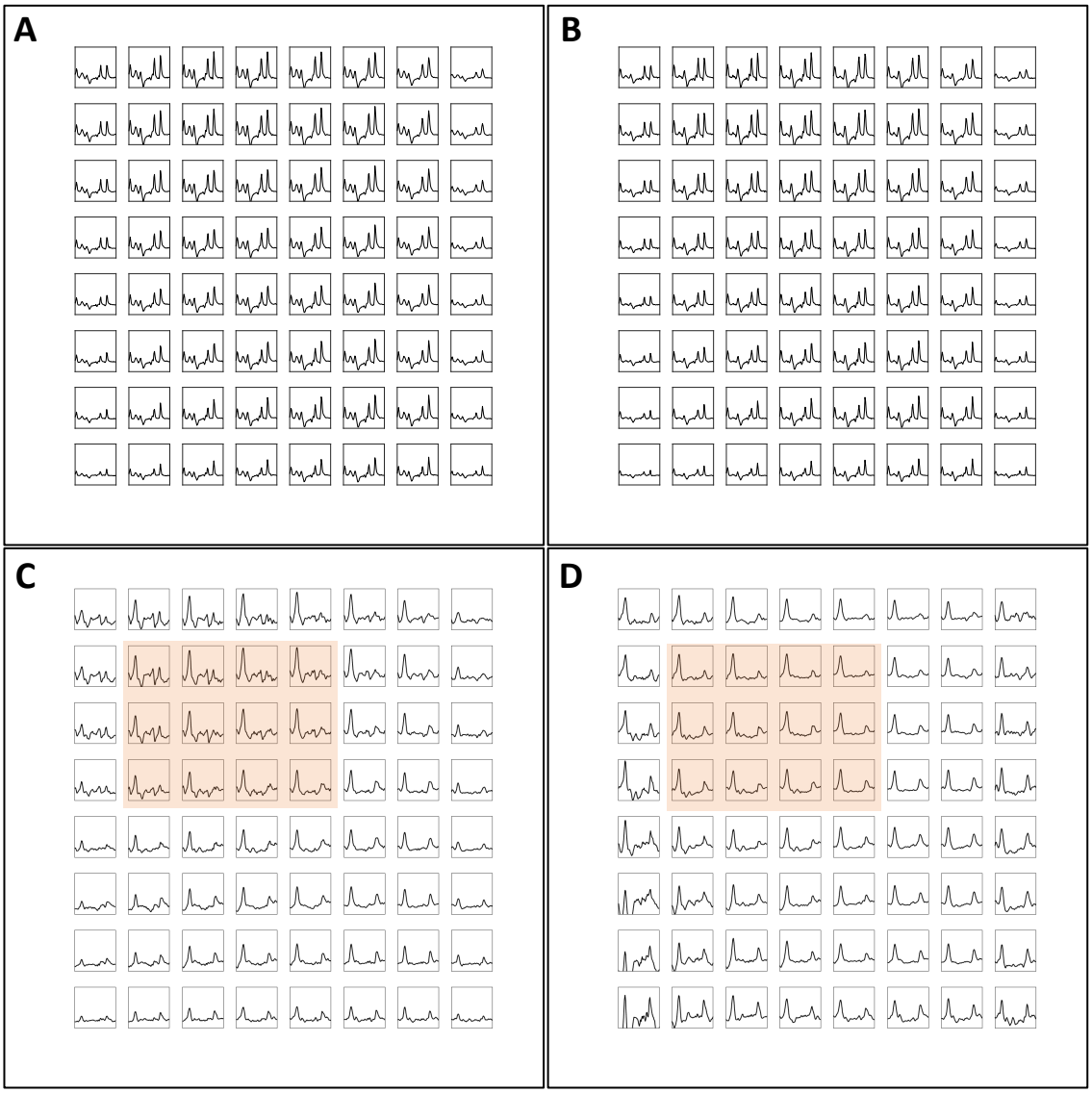
subject	Intra-voxel B0 inhomogeneity range [Hz]	Inter-voxel B0 inhomogeneity range [Hz]	B1 field strength deviation range [%-units]	EE-correction factor, max [ratio]
no1	[5, 15]	[-3 +4]	[-23, +15]	1.34
no2	[9, 23]	[-6, +5]	[-21, +24]	1.29
no3	[7, 46]	[-11, +11]	[-31, +14]	1.66
no4	[8, 32]	[-3, +3]	[-22, +15]	1.33
no5	[6, 20]	[-3, +3]	[-29, +8]	1.58

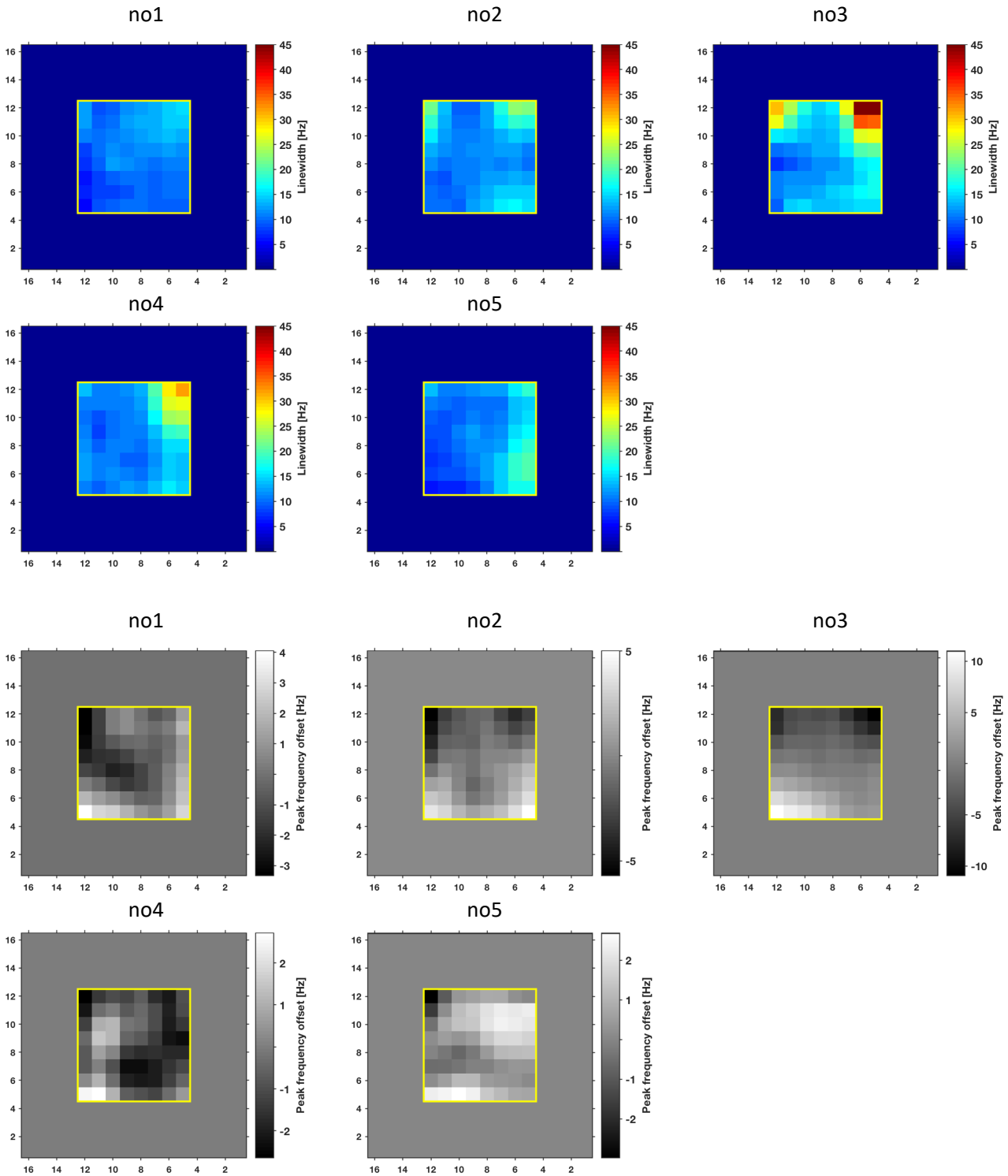
Supporting Information Table S1. The intra-voxel B_0 inhomogeneity is given as OFF-measurement creatine peak linewidth with 6Hz spectral line broadening to allow for fitting at the low SNR measured volume (VOI) edge voxels. The inter-voxel B_0 inhomogeneity, post eddy current correction (ECC), is given as creatine peak frequency offset from the modal creatine peak frequency value over the VOI. Spatial distributions corresponding to the tabulated values are available in the supporting on-line material (Supporting Information Figure S2 and S3).

	A				B			C		
	SNR, creatine [-]				Fit error, creatine [%]			Fit error, GABA+ [%]		
subject	mean	max	min	no of voxels	mean	sd	no of voxels	mean	sd	no of voxels
no1	22	43	8	48	5.8	1.6	64	10.2	3.2	63
no2	23	43	7	46	5.2	1.4	64	10.7	5.4	62
no3	24	53	9	40	5.7	1.7	64	14.2	5.0	61
no4	22	43	7	41	4.7	0.8	64	10.8	4.7	64
no5	20	42	7	44	4.7	0.9	64	11.2	4.9	64

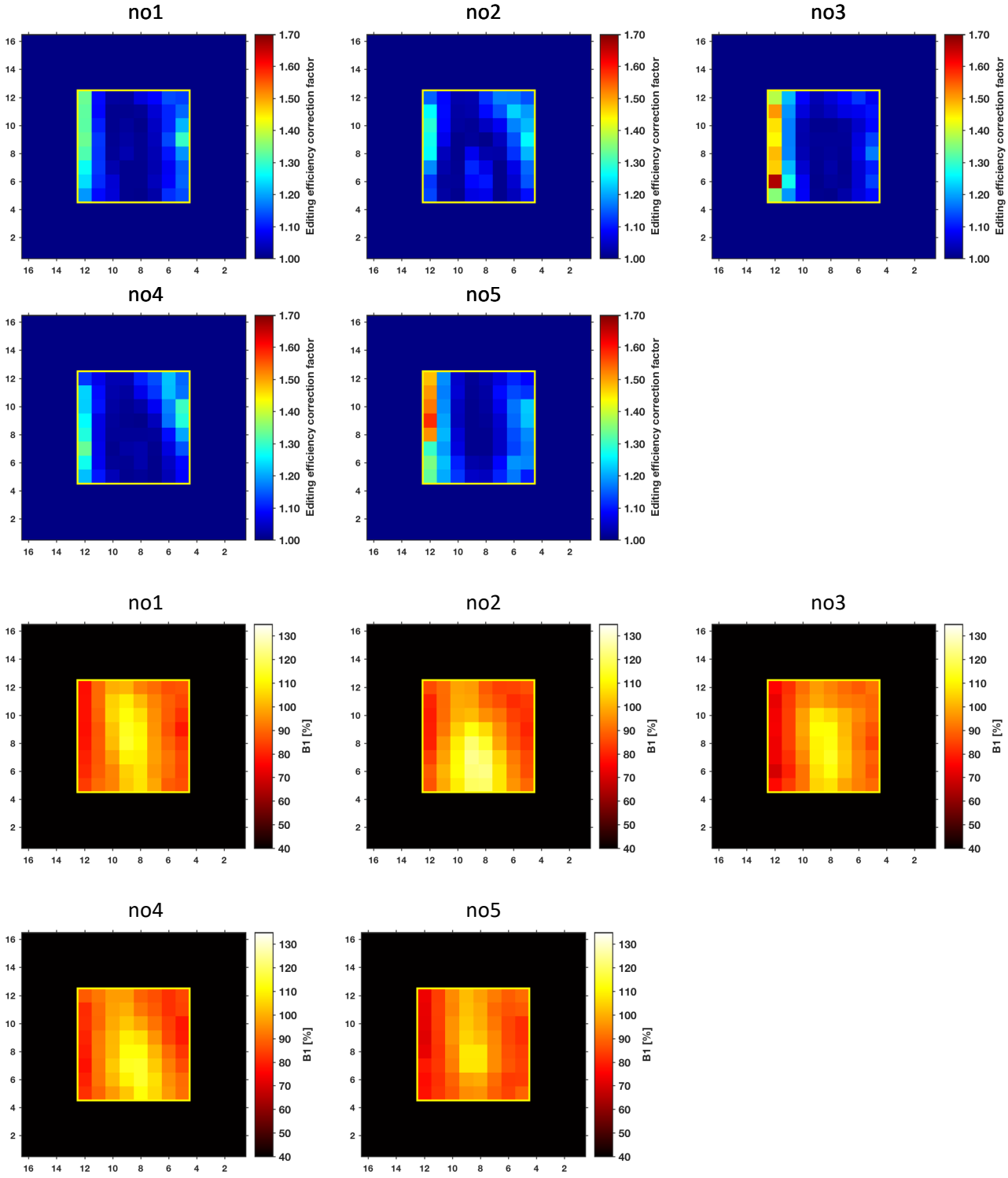
Supporting Information Table S2. A. Average, maximum and minimum of the spatial distribution of creatine signal-to-noise ratio (SNR) over the measured volume (VOI) for the healthy volunteer measurements. The left and right VOI columns and voxels with a creatine peak linewidth ≥20Hz were excluded from the SNR assessment. **B.** Average and standard deviation (sd) of the spatial distribution of the errors in the fit to the creatine signal. **C.** Average and standard deviation (sd) of the spatial distribution of the errors in the fit to the corrected GABA+ signal. Voxels with a GABA+ peak fit error ≥30% were excluded from the GABA+ signal fit error assessment. Spatial distributions corresponding to the tabulated fit error values are available in the supporting on-line material (Supporting Information Figure S4).



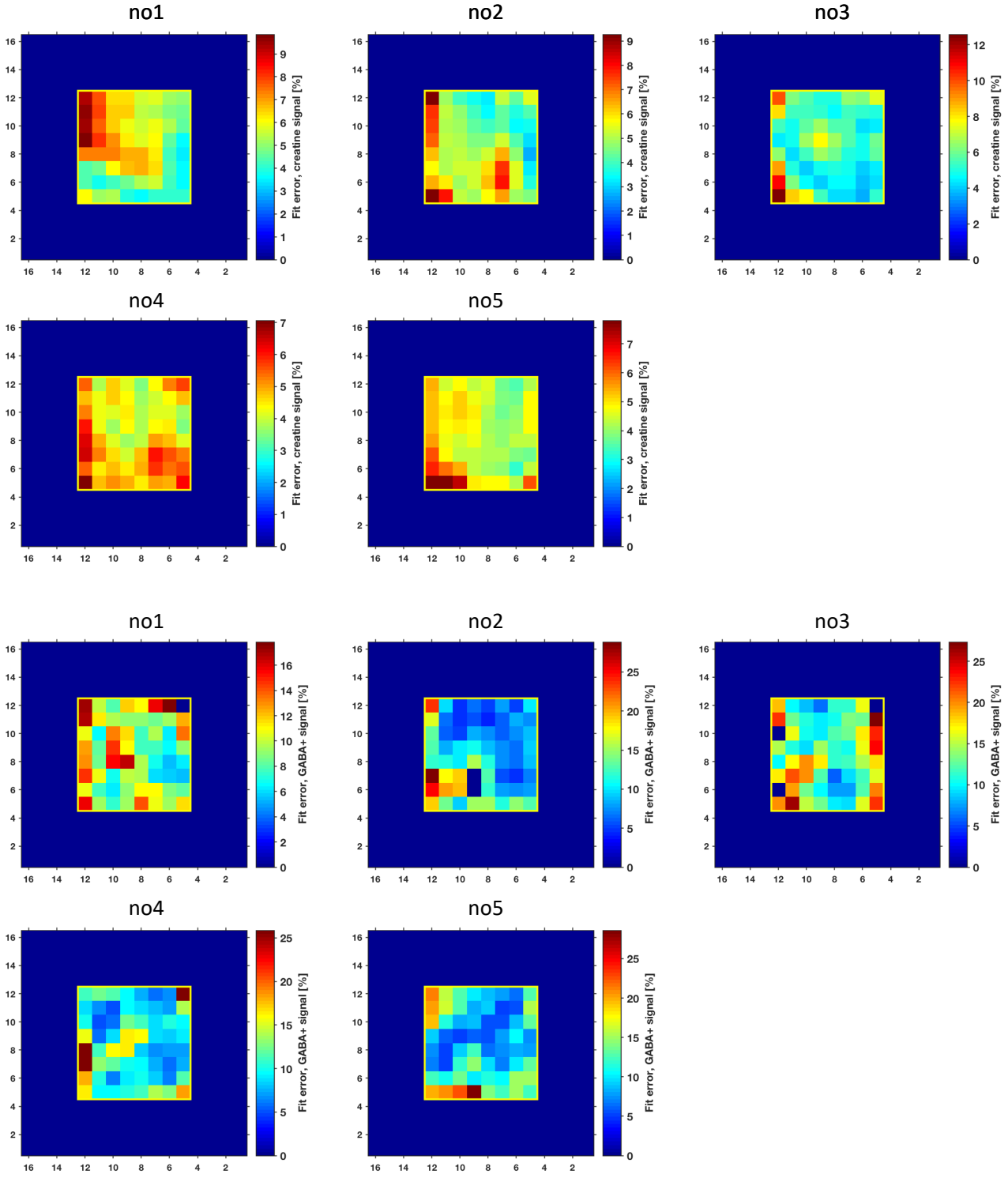
Supporting Information Figure S1. Mosaic spectra view of the spatial distributions of the signals for a healthy volunteer test scan (no1), corresponding to Fig. 4, of the ON-pulse measurement (**A**), the OFF-pulse measurement (**B**), subtracted GABA signal (**C**), and GABA signal after creatine normalization, EE correction and choline peak frequency and phase alignment (**D**). Example VOI sub-region with correctable (**D**, orange region) remaining choline and creatine residuals in subtracted spectra (**C**, orange region) is indicated.



Supporting Information Figure S2. Spatial distributions for the healthy volunteer measurements of the intra-voxel (creatine peak linewidth) and inter-voxel (creatine peak frequency offset) B_0 inhomogeneity, corresponding to the values in Supporting Information Table S1.



Supporting Information Figure S3. Spatial distributions for the healthy volunteer measurements of the editing efficiency (EE) correction factor and the normalized B_1 field strength, corresponding to the values in Supporting Information Table S1.



Supporting Information Figure S4. Spatial distributions for the healthy volunteer measurements of the errors in the fit to the creatine and corrected GABA+ signals, corresponding to the values in Supporting Information Table S2.