

Diffusion Weighted Imaging (DWI)

High resolution multi-shell diffusion weighted imaging (DWI) scans are acquired that allow us to investigate the microstructure of brain tissue. This can for instance be used to study the brain's white matter fiber bundles (the information highways of the brain) both at the level of individual bundles or at a network level (connectomics).

Parameter settings for the diffusion-weighted multi-shell EPI acquisition: 95 different diffusion-weighted directions (15 with b-value 500 s/mm², 30 with b-value 1000 s/mm², 60 with 2000 s/mm² and every 10th scan one diffusion unweighted (b=0) scan); 66 slices; slice thickness = 2 mm (no gap); FOV=224x224 mm; acquisition matrix=112x112; SENSE parallel imaging factor = 1.3; multiband factor 3; TR = 3500 ms ;TE = 99 ms; no cardiac gating; total acquisition time = 510 s. In addition, two short (20 s each) DWI scans are acquired (one with a reversed k-space readout) to correct for susceptibility artefacts.