**Title:** MR Tractography of the Cervical Spine: A Rapid DTI Protocol to Serve as a Clinical Evaluation Tool

**Supplementary Materials: Technical Appendix**

**Technical Appendix: Tractography Post-Processing and Correction Methods**

- **Specific correction algorithms employed**

    - Motion and eddy current correction were performed using DSI Studio's built-in correction tools. These tools apply spatial realignment and distortion correction algorithms tailored for diffusion MRI data, minimizing motion-induced artifacts and eddy current distortions inherent to spinal cord imaging.

- **B-matrix correction parameters**

    - The b-matrix was automatically adjusted within DSI Studio to account for spatial distortions and gradient non-linearities. This ensured accurate mapping of diffusion directions and improved the fidelity of tensor estimation. Parameters were set according to the software's recommended settings for spinal cord DTI, with b-values of 0 and 1000 s/mm² across six directions.

- **Quality assessment metrics for artifact detection**

    - Data quality was assessed by visual inspection of raw and corrected images for residual distortions, signal dropout, and motion artifacts. Quantitative assessment included monitoring the stability and range of fractional anisotropy (FA) and mean diffusivity (MD) values across control cases. Outlier detection was performed by comparing FA/MD values to expected normative ranges and by calculating Z-scores relative to the control group.

- **Validation procedures for correction efficacy**

- Correction efficacy was validated by comparing pre- and post-correction images for visible improvements in anatomical alignment and reduction of artifacts. Additionally, reproducibility was checked by repeating tractography on corrected datasets and confirming consistency in fiber orientation and quantitative metrics (FA/MD). Where available, results were cross-referenced with anatomical landmarks on conventional MRI sequences to ensure anatomical plausibility of tract reconstructions1.