

Description of Additional Supplementary Files

Supplementary Data 1: Participant Characteristics, Pain Assessments, and fMRI Acquisition Parameters Across Datasets

This sheet consolidates cohort-level descriptors and acquisition settings across all datasets. It enumerates pre- and post-exclusion sample sizes, provenance, prior publication status, ethical oversight, demographic summaries, pain instruments, and imaging protocols to facilitate cross-dataset comparability.

Supplementary Data 2: Specificity of CSps: Independence from Demographic and Psychological Factors

This sheet quantifies associations between CSps and demographic/psychological covariates to assess construct specificity. For each dataset and covariate, it reports correlation or regression statistics and significance levels.

Supplementary Data 3: CSps Signature Weights

This sheet provides the connection-level weights composing the CSps, including regional pairings, network annotations, weight direction/magnitude, and resampling-based uncertainty and significance estimates.

Supplementary Data 4: Validation of the Importance of Corticospinal Modeling

This sheet compares alternative model specifications (e.g., cortical-only, spinal-only, integrated corticospinal) across datasets to evaluate the incremental value of corticospinal modeling. It reports hyperparameters and multiple predictive performance metrics.

Supplementary Data 5: Correlations Between Model Predictions and Clinical Variables in DMC Patients

This sheet examines the relationships between model-derived predictive values and clinical/psychometric measures in the DMC cohort, reporting effect sizes, significance, and analytic method.

Supplementary Data 6: Multiresolution Intrinsic Segmentation Template (MIST) Look-up Table

This sheet serves as a look-up table mapping ROI indices to anatomical labels and properties for multiresolution analyses, enabling reproducible interpretation and cross-referencing with figures and weight tables.

Supplementary Data 7: Model Competition across Datasets