

Supplementary Information

Power Analysis

Power analysis was conducted based on previous *in vivo* fractional anisotropy measurements after spinal cord injury in rats performed in the lab. The within-group standard deviation was approximately 0.05, with a difference between groups of approxi-

mately 0.075. Using one-way analysis of variance with injury severity as a four-level factor (mild, moderate, severe, and sham), a minimum of 10 animals is necessary to detect changes between any of the two groups at the power of 0.8 and significance (alpha) of 0.05.

SUPPLEMENTARY TABLE 1. AVERAGE DWI METRICS AND BBB SCORES FOR EACH INJURY GROUP

			<i>Sham</i>	<i>Mild</i>	<i>Moderate</i>	<i>Severe</i>
2 DPI	WM	BBB Score	13.50 ± 1.41	7.73 ± 3.79	3.56 ± 4.95	0.81 ± 0.96
		FA	0.80 ± 0.04	0.80 ± 0.02	0.79 ± 0.03	0.78 ± 0.06
		RD	0.34 ± 0.07	0.34 ± 0.05	0.34 ± 0.05	0.35 ± 0.05
		AD	1.91 ± 0.17	1.95 ± 0.11	1.92 ± 0.21	1.86 ± 0.26
		MD	0.85 ± 0.09	0.88 ± 0.08	0.89 ± 0.08	0.85 ± 0.09
		FA_fwe	0.87 ± 0.04	0.89 ± 0.02	0.89 ± 0.03	0.88 ± 0.04
		RD_fwe	0.24 ± 0.06	0.21 ± 0.03	0.21 ± 0.04	0.21 ± 0.06
		AD_fwe	2.03 ± 0.16	2.09 ± 0.09	2.05 ± 0.17	1.94 ± 0.29
		MD_fwe	0.82 ± 0.04	0.82 ± 0.02	0.81 ± 0.05	0.77 ± 0.09
	FWF_fwe	0.04 ± 0.03	0.05 ± 0.05	0.07 ± 0.06	0.08 ± 0.05	
	GM	FA	0.40 ± 0.04	0.42 ± 0.05	0.42 ± 0.04	0.42 ± 0.06
		RD	0.73 ± 0.07	0.74 ± 0.05	0.74 ± 0.05	0.75 ± 0.05
		AD	1.38 ± 0.17	1.49 ± 0.15	1.50 ± 0.20	1.53 ± 0.18
		MD	0.94 ± 0.09	0.98 ± 0.06	0.99 ± 0.08	0.99 ± 0.06
		FA_fwe	0.56 ± 0.05	0.60 ± 0.08	0.64 ± 0.07	0.64 ± 0.08
		RD_fwe	0.56 ± 0.06	0.54 ± 0.07	0.50 ± 0.05	0.48 ± 0.10
		AD_fwe	1.46 ± 0.13	1.57 ± 0.12	1.58 ± 0.15	1.51 ± 0.20
		MD_fwe	0.86 ± 0.07	0.88 ± 0.03	0.86 ± 0.04	0.82 ± 0.10
FWF_fwe		0.05 ± 0.08	0.05 ± 0.08	0.11 ± 0.10	0.14 ± 0.13	
30 DPI	WM	BBB Score	17.38 ± 1.92	13.70 ± 1.06	12.60 ± 2.50	10.19 ± 2.00
		FA	0.81 ± 0.02	0.81 ± 0.05	0.81 ± 0.03	0.81 ± 0.01
		RD	0.33 ± 0.05	0.33 ± 0.08	0.31 ± 0.06	0.31 ± 0.04
		AD	1.94 ± 0.17	1.94 ± 0.11	1.86 ± 0.12	1.95 ± 0.05
		MD	0.87 ± 0.10	0.87 ± 0.08	0.83 ± 0.05	0.89 ± 0.04
		FA_fwe	0.90 ± 0.03	0.89 ± 0.02	0.88 ± 0.02	0.88 ± 0.03
		RD_fwe	0.19 ± 0.06	0.22 ± 0.03	0.22 ± 0.03	0.22 ± 0.05
		AD_fwe	2.08 ± 0.10	2.04 ± 0.12	2.01 ± 0.17	2.03 ± 0.06
		MD_fwe	0.81 ± 0.04	0.81 ± 0.04	0.80 ± 0.06	0.81 ± 0.05
	FWF_fwe	0.08 ± 0.06	0.07 ± 0.06	0.04 ± 0.02	0.09 ± 0.04	
	GM	FA	0.44 ± 0.05	0.44 ± 0.03	0.43 ± 0.03	0.47 ± 0.02
		RD	0.71 ± 0.08	0.73 ± 0.08	0.71 ± 0.06	0.73 ± 0.05
		AD	1.50 ± 0.22	1.49 ± 0.15	1.42 ± 0.11	1.64 ± 0.11
		MD	0.97 ± 0.12	0.97 ± 0.12	0.93 ± 0.07	1.05 ± 0.05
		FA_fwe	0.62 ± 0.10	0.62 ± 0.07	0.59 ± 0.05	0.67 ± 0.06
		RD_fwe	0.50 ± 0.09	0.51 ± 0.06	0.54 ± 0.04	0.47 ± 0.09
		AD_fwe	1.55 ± 0.15	1.54 ± 0.10	1.49 ± 0.12	1.60 ± 0.08
		MD_fwe	0.85 ± 0.05	0.85 ± 0.05	0.85 ± 0.05	0.85 ± 0.07
FWF_fwe		0.57 ± 2.15	0.10 ± 0.15	0.05 ± 0.04	0.20 ± 0.12	
90 DPI	WM	BBB Score	18.33 ± 1.87	15.39 ± 2.20	13.50 ± 2.51	10.56 ± 1.42
		FA	0.81 ± 0.02	0.81 ± 0.03	0.80 ± 0.02	0.78 ± 0.04
		RD	0.30 ± 0.00	0.31 ± 0.03	0.31 ± 0.05	0.34 ± 0.07
		AD	1.84 ± 0.22	1.80 ± 0.11	1.85 ± 0.18	1.70 ± 0.14
		MD	0.82 ± 0.08	0.80 ± 0.07	0.84 ± 0.09	0.80 ± 0.07
		FA_fwe	0.88 ± 0.03	0.87 ± 0.02	0.89 ± 0.01	0.87 ± 0.01
		RD_fwe	0.21 ± 0.04	0.24 ± 0.03	0.21 ± 0.02	0.21 ± 0.01
		AD_fwe	1.96 ± 0.22	1.95 ± 0.10	1.92 ± 0.10	1.77 ± 0.14
		MD_fwe	0.78 ± 0.06	0.80 ± 0.04	0.77 ± 0.04	0.71 ± 0.06
	FWF_fwe	0.04 ± 0.03	0.05 ± 0.05	0.06 ± 0.04	0.08 ± 0.09	
	GM	FA	0.41 ± 0.09	0.44 ± 0.05	0.43 ± 0.02	0.40 ± 0.07
		RD	0.69 ± 0.03	0.67 ± 0.05	0.72 ± 0.08	0.71 ± 0.09
		AD	1.39 ± 0.25	1.40 ± 0.14	1.45 ± 0.14	1.36 ± 0.24
		MD	0.91 ± 0.09	0.91 ± 0.08	0.94 ± 0.08	0.92 ± 0.14
		FA_fwe	0.57 ± 0.10	0.59 ± 0.06	0.59 ± 0.01	0.60 ± 0.14
		RD_fwe	0.53 ± 0.04	0.54 ± 0.06	0.52 ± 0.03	0.46 ± 0.10
		AD_fwe	1.44 ± 0.23	1.49 ± 0.11	1.45 ± 0.07	1.34 ± 0.20
		MD_fwe	0.84 ± 0.06	0.85 ± 0.06	0.83 ± 0.04	0.75 ± 0.09
FWF_fwe		0.03 ± 0.03	0.05 ± 0.10	0.08 ± 0.07	0.14 ± 0.16	

Mean standard and deviation are listed for each of the parameters and injury groups at 2, 30, and 90 DPI.

DWI, diffusion-weighted imaging; BBB, Basso, Bresnahan, and Beattie; DPI, days post-injury; WM, white matter; FA, fractional anisotropy; RD, radial diffusivity; AD, axial diffusivity; MD, mean diffusivity; fwe, free water elimination; GM, gray matter.