

Mindfulness for Chronic Back Pain: Tables & Figures

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Table 1: Seed-to-Voxel Results

Condition	Region of interest	Brain region	Cluster size (voxels)	Peak MNI coordinates	Effect size (T)	Cluster p-FDR
body-focus (post>pre)	Medial prefrontal cortex	Precuneus	31	(-10, -42, 52)	70.24	0.048723
	Posterior cingulate cortex	R middle frontal gyrus	37	(42, 6, 34)	41.24	0.019977
	R insula	L frontal pole	101	(-16, 62, 36)	54.55	0.000012
		R superior frontal gyrus	91	(16, 34, 56)	24.25	0.000017
body-focus (pre>post)	Medial prefrontal cortex	R superior frontal gyrus	34	(26, 34, 48)	33.99	0.014814
		R middle frontal gyrus	33	(36, 18, 48)	41.96	0.014814
		L superior frontal gyrus	28	(-20, 22, 54)	30.73	0.022359
		R anterior supramarginal gyrus	96	(66, -14, 32)	153.87	0.000017
	R insula	L anterior supramarginal gyrus	48	(-50, -30, 38)	61.31	0.002440
		R precentral & postcentral gyri	56	(56, -10, 50)	55.16	0.001695
	L insula	R middle frontal gyrus	32	(50, 28, 46)	41.86	0.022211
	R insula	R middle frontal gyrus	84	(48, 30, 48)	48.72	0.000018
mind-wandering (post>pre)	L insula	R middle frontal gyrus	84	(48, 30, 48)	48.72	0.000018
mind-wandering (pre>post)	Posterior cingulate cortex	R inferior temporal gyrus	35	(52, -18, -32)	39.77	0.012454
		R frontal pole	34	(+16 +36 +54)	68.72	0.012454
		R frontal pole	26	(+02 +62 +32)	22.54	0.031817
	L insula	L precentral gyrus	196	(-16, -32, 62)	81.08	0.000000
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Table 1: Nodes of the default mode network (medial prefrontal cortex, posterior cingulate cortex/precuneus) and the insula demonstrate changes in functional connectivity to specific clusters following one week of mindfulness meditation under both body-focus and mind-wandering conditions. All clusters are located in the cerebral cortex. The brain region associated with each cluster is the region that contains the most voxels of that cluster. Statistical threshold is corrected $p < 0.05$ with at least 10 contiguous voxels. Voxel size = $3mm \times 3mm \times 3mm$. L: left; R: right; MNI: Montreal Neurological Institute.

Figure 1: Body-Focus Connectivity Changes

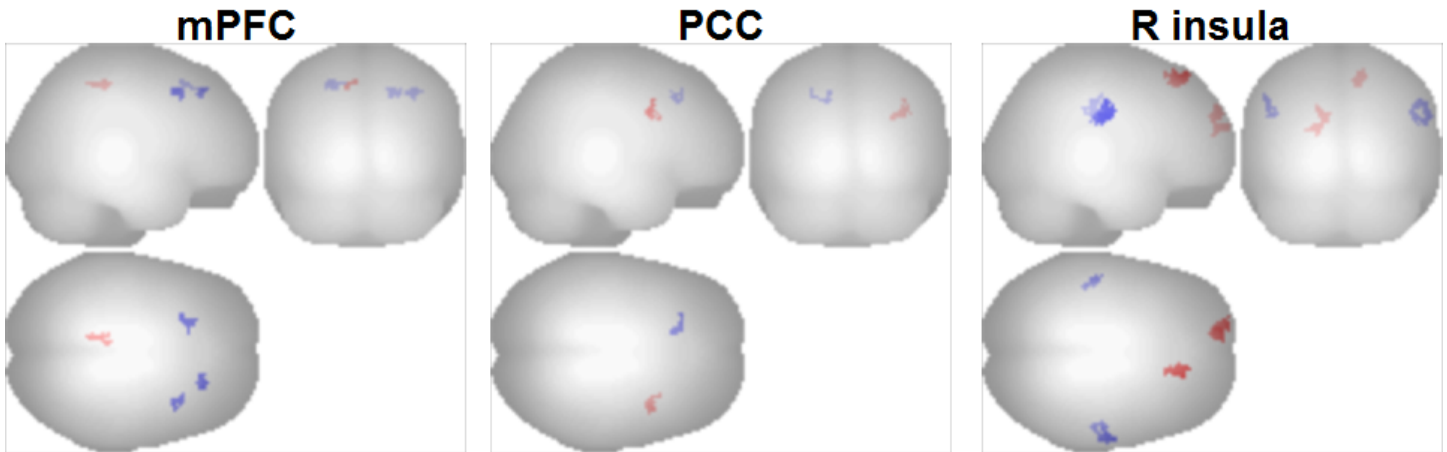


Figure 1: Changes in connectivity of the mPFC, PCC, and right insula to other regions during body-focus occur after one week of mindfulness. The most drastic changes occur with the right insula decoupling from bilateral somatosensory cortices and coupling with frontal regions. Right lateral, anterior, and dorsal views (translucent surfaces). Red: increased; Blue: decreased.

Figure 2: PCC Clusters

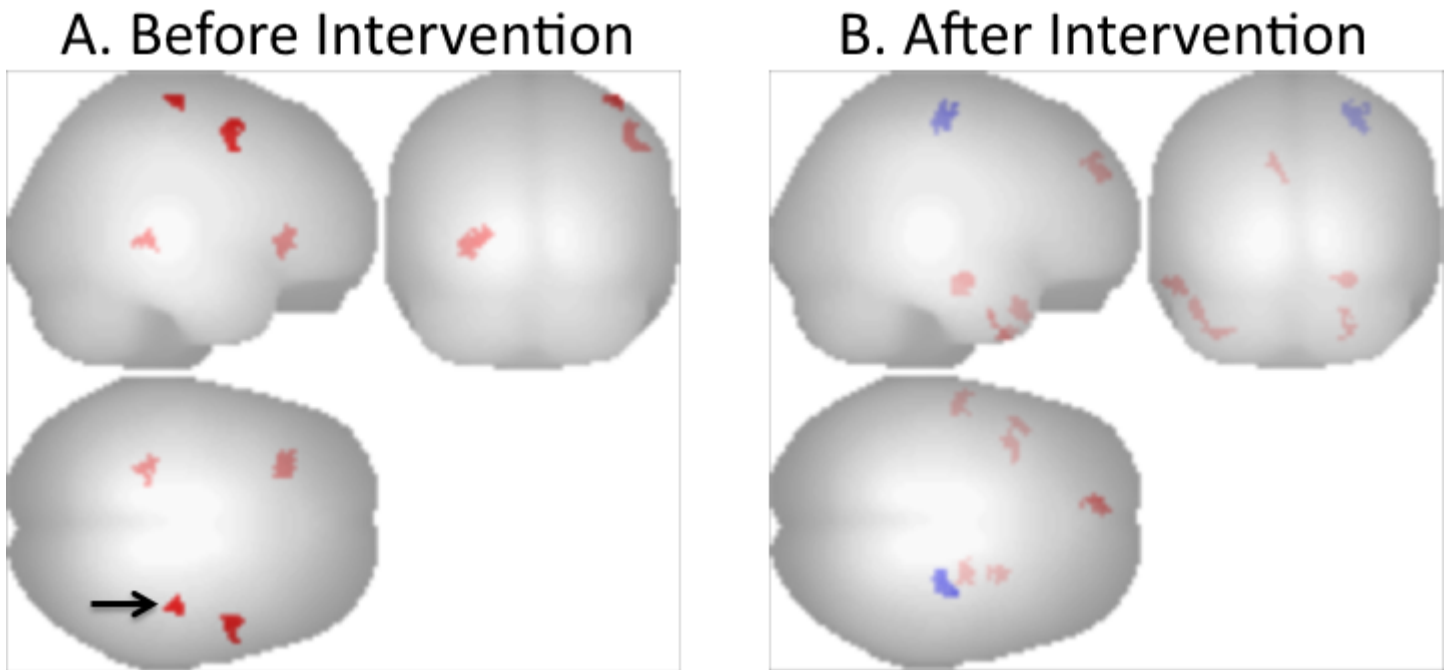


Figure 2: (A) Before mindfulness, the functional connectivity of the PCC to four distinct clusters increased during body-focus over mind-wandering (red). There were no clusters that were more strongly correlated in mind-wandering than in body-focus. (B) After mindfulness, the PCC was more strongly connected to a cluster in the right somatosensory cortex during mind-wandering than body-focus (blue). This cluster is very similar to one that exhibited the opposite pattern of connectivity before mindfulness (A; arrow). During body-focus, the PCC had stronger connectivity to several clusters in the temporal lobes than in mind-wandering (red).