Supplementary Information for

Low Level Light Therapy Effect on Resting-State Connectivity in Patients Following Moderate Traumatic Brain Injury

Chan *et al.*

Correspondence to: stchan@mgh.harvard.edu

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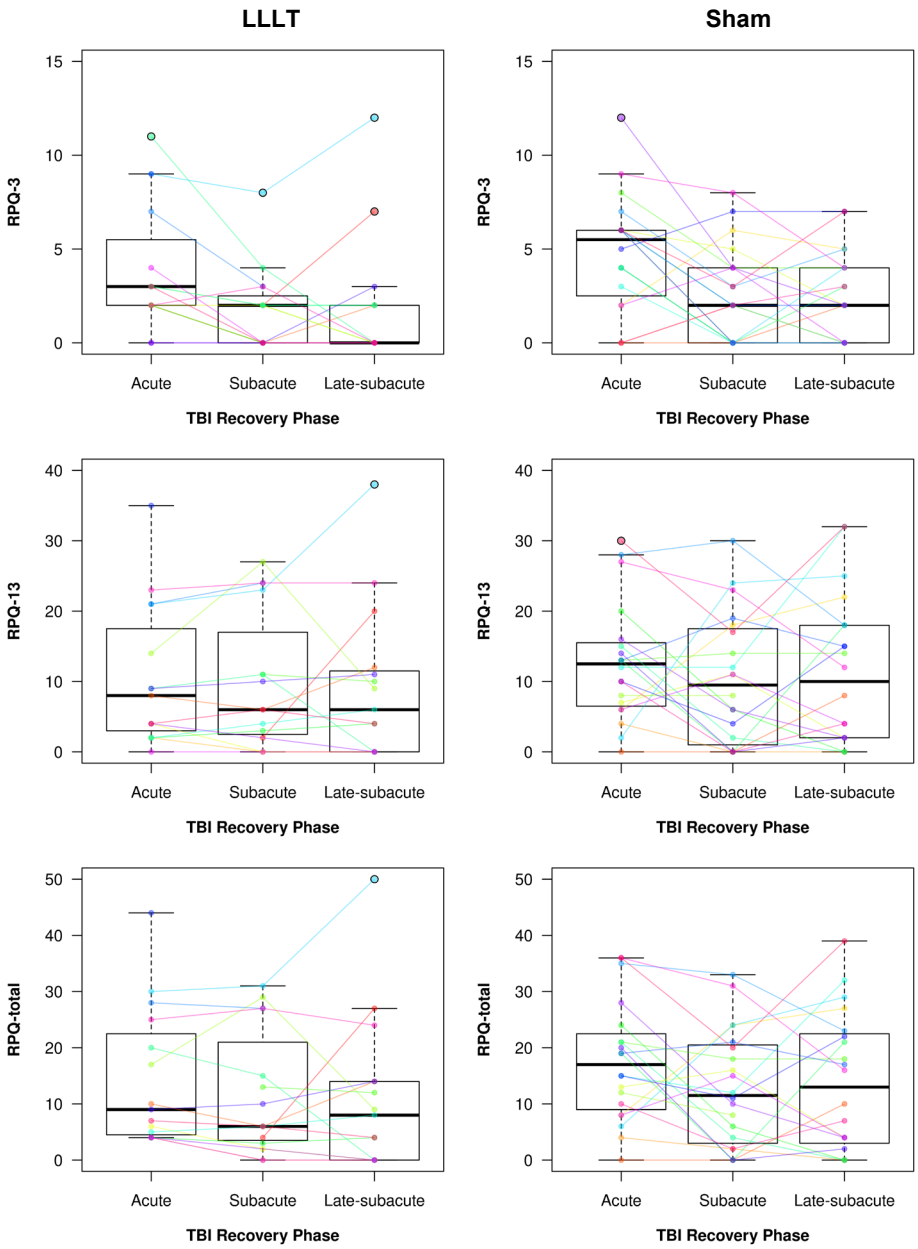
1 Supplementary Notes

1.1 Supplementary Note 1: RPQ scores for individual sham- and LLLT-treated patients



Supplementary Figure 1. Rivermead Post-Concussion Questionnaire (RPQ) scores for the patients receiving LLLT and sham treatment. Boxplot indicates median (thick horizontal line), 25% (lower edge of the box), 75% percentiles (upper edge of the box), standard deviation (error bars) in the group. The color lines represent the progression of RPQ scores for individual patients during the acute, subacute and late-subacute phases.

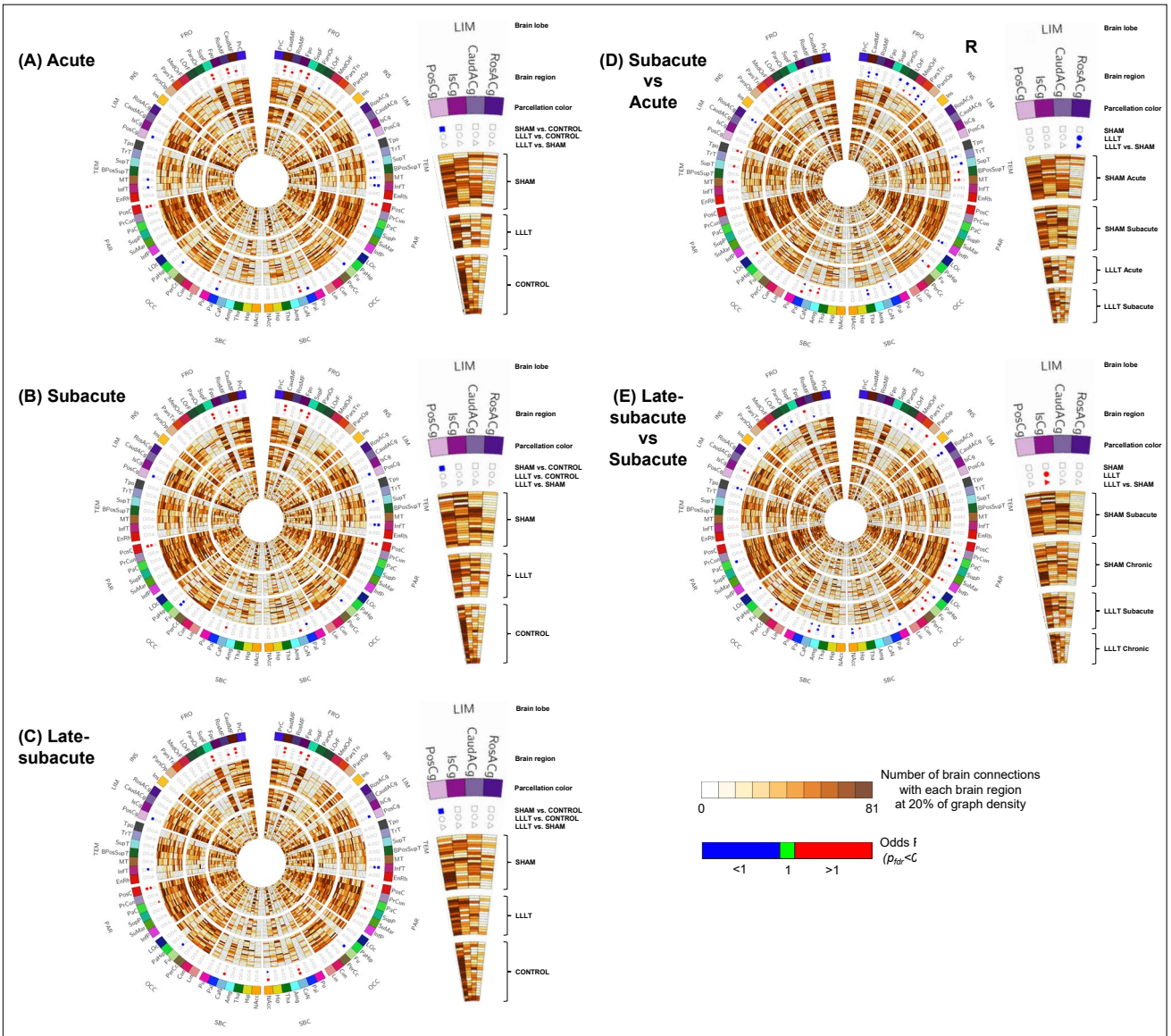
1.2 Supplementary Note 2: Nodal centrality for individual patients and healthy controls used in the cross-sectional comparisons between patients and healthy controls, and in the cross-sectional and temporal comparisons between sham- and LLLT-treated patients

For each subject, we used nodal centrality to qualitatively summarize how each brain region connected with the others[1,2]. Nodal centrality is defined as the number of connections with a brain region[1,2]. Hub regions often interact with many other regions in the network and thus have high centrality. We thresholded the connectivity matrix at the graph density of 20%[2] by keeping the top 20% of the highest correlation coefficients (i.e., $k_i = \sum_{j \in N} a_{ij}$), where a_{ij} is the connection status between node i and node j, a_{ij}=1 when the link (i,j) exists and otherwise a_{ij}=0. a_{ii}=0 for all nodes i, and N is the set of all nodes in the brain network. The nodal centrality of each brain region in each subject is presented in the circular connectograms generated using Circos.0.69.9 (http://circos.ca) with the template adapted from Irimia et al.[3] (Supplementary Figure 2).

An ordinal mixed-effects regression model was constructed to quantify the association between nodal centrality (*ki*), TBI recovery phase (acute, subacute, and late-subacute), treatment group (control, sham, and LLLT), and their interaction while accounting for data dependencies using a random-intercept model. The odds ratio (*OR*), their associated 95% confidence interval (95% CI), and uncorrected p-values (p) were computed for the association between nodal centrality and the study group (Sham vs. Control, LLLT vs. Control, and LLLT vs. Sham) during the acute, subacute, and late-subacute phases (Supplementary Table 1). False discovery rate (FDR) adjusted p-values (p_{fdr}) were computed to account for multiple comparisons[4], and we defined significant differences in nodal centrality as those with a p_{fdr}<0.05. All analyses were performed using R.4.0.0 (https://www.R-project.org). The odds ratio of nodal centrality for the brain regions showing significant differences (p_{fdr}<0.05) in these cross-sectional group comparisons are presented in the connectograms in Supplementary Figures 2A-2C. For example, in the comparison of sham-treated

patients vs. healthy controls during the acute phase, the odds of nodal centrality at the left superior frontal region (l-SupF) were 2.51 times greater in the sham-treated patients than in the healthy controls (95% CI=1.71 – 3.67, p_{fdr}<0.001) (Supplementary Table 1A; red square in Supplementary Figure 2A), indicating a positive association between nodal centrality and moderate TBI.

The *OR*, their associated 95% CI, uncorrected *p*, and p_{fdr} were also computed for the association between nodal centrality and TBI recovery phase (Subacute vs. Acute, and Late-subacute vs. Subacute) in the treatment groups (Sham and LLLT) (Supplementary Table 2), and the association between temporal differences in nodal centrality (Subacute vs. Acute, and Late-subacute vs. Subacute) and treatment group (LLLT vs. Sham) (Supplementary Table 3). The odds ratio for the brain regions showing significant differences (p_{fdr}<0.05) in these temporal group comparisons are presented in the connectograms in Supplementary Figures 2D-2E.



BRAIN REGIONS:

FRO	**Frontal**	**INS**	**Insular**	**LIM**	**Limbic**	**TEM**	**Temporal**	**PAR**	**Parietal**	**OCC**	**Occipital**
Fpo	frontal pole	Ins	insula	RosACg	rostral anterior cingulate	Tpo	temporal pole	SupP	superior parietal	LOc	lateral occipital
SupF	superior frontal			CaudACg	caudal anterior cingulate	SupT	superior temporal	InfP	inferior parietal	Cun	cuneus
PrC	precentral			IsCg	isthmus cingulate	BPosSupT	banksts	SuMar	supramarginal	PerCc	pericalcarine
CaudMF	caudal middle frontal			PosCg	posterior cingulate	TrT	transverse temporal	PosC	postcentral	Lin	lingual
RosMF	rostral middle frontal					MT	middle temporal	PaC	paracentral	PaHip	parahippocampal
ParsOp	pars opercularis					InfT	inferior temporal	PrCun	precuneus	Fu	fusiform
ParsTri	pars triangularis					EnRh	entorhinal				
ParsOr	pars orbitalis										
LOrF	lateral orbitofrontal										
MedOrF	medial orbitofrontal										

SBC	**Subcortical**		
Pu	putamen		
Pal	pallidum		
CaN	caudate		
NAcc	accumbens area		
Amg	amygdala		
Tha	thalamus		
Hip	hippocampus		

Supplementary Figure 2. Connectograms showing the nodal centrality (i.e., the number of brain connections) of each brain region at the graph density of 20%. A legend of the representation of metrics is included on the right of each connectogram. The parcellated brain regions are assigned with unique RGB colors defined in Freesurfer software[5] (outermost circular track), and the labels are at the bottom of the figures. The three circular tracks with color symbols (□, ○ and ▷) next to parcellation color track indicate the odds ratios in the comparisons labeled. Red color represents odds ratios of nodal centrality greater than 1, while blue color represents odds ratios smaller than 1. Green color is assigned to odds ratio of nodal centrality equal to 1. Each circular track in a white-brown colorscale represents the number of brain connections for each of the 82 brain regions in each subject. Dark colors represent large number of connections. The circular tracks from the patients/healthy controls in the same group are stacked together. All the comparisons are corrected at $p_{fdr}<0.05$.

Supplementary Table 1. The odds ratio (*OR*), their associated 95% confidence interval (95% CI), uncorrected p-values (*p*), and false discovery rate adjusted p-values (p_{fdr}) to assess the association between nodal centrality and study group (Sham vs. Control, LLLT vs. Control, and LLLT vs. Sham) during the acute, subacute, and late-subacute phases. The order of brain regions in each comparison below is the same as that in the connectograms starting from l-PrC. * represents significant association at $p_{fdr} < 0.05$. Underlined p_{fdr} represents that significant association ($p_{fdr} < 0.05$) in the corresponding brain region was consistently observed in the comparisons of the same pair of study groups during the acute, subacute, and late-subacute phases.

(A) ACUTE PHASE

	Sham vs. Control			**LLLT vs. Control**			**LLLT vs. Sham**		
Regions	**Odds Ratio, *OR* (95% CI)**	***p***	p_{fdr}	**Odds Ratio, *OR* (95% CI)**	***p***	p_{fdr}	**Odds Ratio, *OR* (95% CI)**	***p***	p_{fdr}
l-PrC	1.12 (0.83, 1.53)	0.452	0.669	1.55 (1.11, 2.16)	0.009	0.053	1.38 (0.98, 1.95)	0.069	0.207
l-CaudMF	1.96 (1.18, 3.26)	0.010	0.054	2.96 (1.72, 5.10)	<0.001	0.001*	1.51 (0.87, 2.63)	0.143	0.340
l-RosMF	2.52 (1.41, 4.53)	0.002	0.017*	3.27 (1.75, 6.10)	<0.001	0.003*	1.30 (0.69, 2.44)	0.421	0.644
l-Fpo	2.90 (0.97, 8.64)	0.056	0.182	1.35 (0.40, 4.53)	0.628	0.803	0.47 (0.14, 1.55)	0.213	0.433
l-SupF	2.51 (1.71, 3.67)	<0.001	<0.001*	2.76 (1.83, 4.17)	<0.001	<0.001*	1.10 (0.72, 1.68)	0.651	0.818
l-ParsOr	0.65 (0.33, 1.27)	0.206	0.424	0.87 (0.42, 1.81)	0.714	0.857	1.35 (0.63, 2.89)	0.435	0.656
l-LOrF	1.08 (0.49, 2.42)	0.842	0.925	0.60 (0.25, 1.44)	0.254	0.481	0.56 (0.23, 1.35)	0.195	0.411
l-MedOrF	1.04 (0.56, 1.93)	0.904	0.955	0.52 (0.26, 1.03)	0.062	0.193	0.50 (0.25, 1.02)	0.056	0.181
l-ParsTri	1.24 (0.85, 1.82)	0.262	0.489	1.16 (0.76, 1.77)	0.484	0.696	0.93 (0.60, 1.45)	0.758	0.880
l-ParsOp	1.23 (0.87, 1.75)	0.238	0.463	1.34 (0.92, 1.96)	0.127	0.315	1.09 (0.73, 1.62)	0.670	0.831
l-Ins	0.94 (0.72, 1.22)	0.628	0.803	0.87 (0.65, 1.16)	0.353	0.583	0.93 (0.69, 1.26)	0.642	0.812
l-RosACg	1.04 (0.69, 1.57)	0.850	0.928	1.75 (1.13, 2.71)	0.012	0.064	1.68 (1.06, 2.66)	0.026	0.110
l-CaudACg	1.13 (0.74, 1.72)	0.586	0.774	0.98 (0.62, 1.56)	0.943	0.973	0.87 (0.54, 1.41)	0.580	0.769
l-IsCg	1.14 (0.78, 1.67)	0.495	0.706	0.76 (0.50, 1.16)	0.201	0.419	0.67 (0.43, 1.03)	0.067	0.205
l-PosCg	0.68 (0.53, 0.86)	0.001	0.011*	0.78 (0.60, 1.01)	0.060	0.190	1.15 (0.87, 1.52)	0.323	0.553
l-Tpo	1.46 (0.52, 4.05)	0.473	0.687	0.84 (0.28, 2.56)	0.762	0.882	0.58 (0.19, 1.80)	0.345	0.575
l-TrT	1.17 (0.75, 1.82)	0.483	0.695	1.26 (0.78, 2.03)	0.337	0.568	1.08 (0.66, 1.76)	0.767	0.885
l-SupT	0.96 (0.69, 1.35)	0.833	0.920	0.74 (0.51, 1.07)	0.105	0.277	0.77 (0.52, 1.12)	0.171	0.379
l-BPosSupT	1.05 (0.68, 1.61)	0.838	0.923	1.07 (0.67, 1.71)	0.762	0.882	1.03 (0.63, 1.67)	0.912	0.958
l-MT	0.89 (0.63, 1.27)	0.519	0.725	0.52 (0.35, 0.76)	0.001	0.010*	0.58 (0.38, 0.87)	0.009	0.052
l-InfT	0.66 (0.37, 1.18)	0.161	0.365	0.38 (0.20, 0.73)	0.003	0.026*	0.58 (0.30, 1.13)	0.111	0.288
l-EnRh	0.96 (0.32, 2.82)	0.934	0.969	0.77 (0.24, 2.48)	0.663	0.826	0.81 (0.24, 2.68)	0.726	0.864
l-PosC	2.14 (1.53, 2.99)	<0.001	<0.001*	2.70 (1.88, 3.86)	<0.001	<0.001*	1.26 (0.87, 1.83)	0.228	0.451
l-PrCun	0.92 (0.74, 1.15)	0.469	0.684	0.98 (0.77, 1.25)	0.882	0.943	1.06 (0.82, 1.38)	0.639	0.810
l-PaC	1.02 (0.77, 1.34)	0.913	0.958	1.31 (0.97, 1.77)	0.073	0.216	1.29 (0.94, 1.77)	0.109	0.283
l-SupP	1.58 (1.10, 2.28)	0.014	0.071	1.65 (1.11, 2.45)	0.014	0.069	1.04 (0.69, 1.57)	0.846	0.927
l-SuMar	1.16 (0.88, 1.52)	0.290	0.521	1.23 (0.91, 1.66)	0.181	0.393	1.06 (0.77, 1.45)	0.721	0.861
l-InfP	1.48 (1.01, 2.19)	0.047	0.162	1.47 (0.96, 2.24)	0.074	0.217	0.99 (0.64, 1.53)	0.959	0.980
l-LOc	0.91 (0.58, 1.44)	0.686	0.841	0.87 (0.53, 1.43)	0.592	0.778	0.96 (0.58, 1.60)	0.876	0.940
l-PaHip	1.42 (0.67, 3.01)	0.359	0.588	1.12 (0.50, 2.52)	0.785	0.894	0.79 (0.34, 1.80)	0.572	0.763
l-Fu	0.60 (0.38, 0.96)	0.033	0.127	0.51 (0.31, 0.84)	0.008	0.047*	0.84 (0.50, 1.41)	0.516	0.723
l-PerCc	1.05 (0.74, 1.50)	0.780	0.892	1.02 (0.69, 1.50)	0.933	0.968	0.97 (0.64, 1.45)	0.869	0.937
l-Cun	1.29 (0.93, 1.78)	0.129	0.318	1.00 (0.70, 1.43)	0.993	0.997	0.78 (0.54, 1.13)	0.191	0.406
l-Lin	0.98 (0.70, 1.38)	0.913	0.958	0.75 (0.51, 1.09)	0.125	0.313	0.76 (0.51, 1.13)	0.170	0.378
l-Pu	0.80 (0.45, 1.40)	0.428	0.650	1.01 (0.55, 1.85)	0.974	0.987	1.27 (0.68, 2.37)	0.457	0.674
l-Pal	0.32 (0.16, 0.65)	0.002	0.014*	1.12 (0.54, 2.30)	0.767	0.885	3.51 (1.59, 7.77)	0.002	0.017*
l-CaN	1.78 (1.00, 3.17)	0.049	0.167	1.78 (0.96, 3.30)	0.069	0.208	1.00 (0.53, 1.89)	0.993	0.997
l-Amg	1.08 (0.48, 2.44)	0.851	0.929	0.62 (0.25, 1.53)	0.301	0.532	0.58 (0.23, 1.45)	0.241	0.466
l-Tha	0.85 (0.47, 1.53)	0.595	0.781	0.89 (0.47, 1.66)	0.708	0.853	1.04 (0.54, 1.99)	0.907	0.956
l-Hip	0.92 (0.55, 1.52)	0.732	0.867	1.14 (0.66, 1.97)	0.629	0.803	1.25 (0.71, 2.20)	0.441	0.661
l-NAcc	2.18 (0.77, 6.13)	0.141	0.337	2.14 (0.69, 6.58)	0.186	0.401	0.98 (0.32, 3.03)	0.973	0.987

r-NAcc	3.06 (1.12, 8.35)	0.029	0.118	2.06 (0.68, 6.19)	0.199	0.417	0.67 (0.22, 2.02)	0.479	0.692
r-Hip	1.73 (0.92, 3.27)	0.091	0.252	0.96 (0.48, 1.92)	0.904	0.955	0.55 (0.27, 1.12)	0.101	0.269
r-Tha	0.52 (0.30, 0.88)	0.015	0.075	0.89 (0.51, 1.58)	0.702	0.850	1.74 (0.96, 3.14)	0.068	0.205
r-Amg	1.86 (0.81, 4.26)	0.141	0.336	1.04 (0.42, 2.58)	0.938	0.971	0.56 (0.22, 1.40)	0.214	0.433
r-CaN	2.28 (1.31, 3.98)	0.004	0.027*	2.33 (1.28, 4.23)	0.006	0.037*	1.02 (0.55, 1.88)	0.952	0.977
r-Pal	0.34 (0.16, 0.73)	0.006	0.038*	0.61 (0.27, 1.40)	0.248	0.474	1.82 (0.75, 4.40)	0.185	0.399
r-Pu	0.70 (0.44, 1.12)	0.140	0.336	0.76 (0.46, 1.27)	0.300	0.531	1.09 (0.64, 1.85)	0.756	0.879
r-Lin	0.82 (0.58, 1.16)	0.262	0.489	0.65 (0.44, 0.95)	0.024	0.104	0.79 (0.53, 1.17)	0.239	0.465
r-Cun	1.12 (0.83, 1.50)	0.471	0.685	1.06 (0.76, 1.47)	0.748	0.875	0.95 (0.67, 1.34)	0.752	0.876
r-PerCc	1.07 (0.76, 1.50)	0.715	0.858	1.07 (0.74, 1.56)	0.708	0.853	1.01 (0.68, 1.49)	0.969	0.985
r-Fu	0.47 (0.30, 0.75)	0.002	0.015*	0.54 (0.33, 0.89)	0.016	0.076	1.14 (0.68, 1.92)	0.619	0.796
r-PaHip	2.08 (0.84, 5.10)	0.111	0.288	0.92 (0.35, 2.43)	0.861	0.933	0.44 (0.16, 1.19)	0.106	0.278
r-LOc	1.35 (0.94, 1.94)	0.109	0.283	0.98 (0.66, 1.47)	0.939	0.971	0.73 (0.48, 1.11)	0.141	0.337
r-InfP	1.29 (0.82, 2.03)	0.263	0.490	1.43 (0.88, 2.32)	0.145	0.342	1.11 (0.67, 1.82)	0.686	0.841
r-SuMar	1.28 (0.94, 1.75)	0.121	0.305	1.26 (0.89, 1.78)	0.189	0.405	0.98 (0.69, 1.41)	0.923	0.963
r-SupP	1.62 (1.08, 2.42)	0.019	0.089	1.92 (1.25, 2.96)	0.003	0.024*	1.19 (0.76, 1.85)	0.452	0.669
r-PaC	0.89 (0.69, 1.15)	0.393	0.617	1.21 (0.91, 1.59)	0.189	0.405	1.35 (1.00, 1.81)	0.049	0.166
r-PrCun	0.90 (0.74, 1.11)	0.336	0.567	0.89 (0.71, 1.12)	0.337	0.568	0.99 (0.77, 1.26)	0.922	0.963
r-PosC	1.73 (1.23, 2.44)	0.002	0.014*	2.32 (1.61, 3.36)	<0.001	<0.001*	1.34 (0.91, 1.97)	0.133	0.325
r-EnRh	0.57 (0.18, 1.79)	0.332	0.562	0.38 (0.11, 1.38)	0.142	0.338	0.68 (0.18, 2.54)	0.564	0.758
r-InfT	0.36 (0.20, 0.65)	0.001	0.007*	0.35 (0.19, 0.65)	0.001	0.010*	0.96 (0.50, 1.84)	0.898	0.951
r-MT	0.97 (0.66, 1.43)	0.896	0.951	0.48 (0.31, 0.74)	0.001	0.009*	0.49 (0.32, 0.77)	0.002	0.017*
r-BPosSupT	1.20 (0.76, 1.90)	0.434	0.655	0.70 (0.42, 1.16)	0.166	0.373	0.58 (0.34, 0.98)	0.043	0.154
r-SupT	0.97 (0.70, 1.34)	0.838	0.923	0.60 (0.42, 0.87)	0.006	0.038*	0.62 (0.43, 0.91)	0.014	0.071
r-TrT	0.96 (0.61, 1.52)	0.863	0.935	1.13 (0.69, 1.86)	0.622	0.798	1.18 (0.71, 1.97)	0.529	0.732
r-Tpo	0.98 (0.25, 3.78)	0.972	0.986	0.25 (0.05, 1.16)	0.077	0.224	0.26 (0.05, 1.23)	0.089	0.248
r-PosCg	0.69 (0.54, 0.87)	0.002	0.015*	0.78 (0.60, 1.02)	0.066	0.203	1.14 (0.87, 1.51)	0.347	0.577
r-IsCg	1.24 (0.85, 1.80)	0.263	0.491	0.96 (0.64, 1.45)	0.859	0.933	0.78 (0.51, 1.19)	0.248	0.475
r-CaudACg	0.99 (0.68, 1.44)	0.953	0.977	0.99 (0.66, 1.49)	0.951	0.977	1.00 (0.65, 1.53)	0.994	0.998
r-RosACg	1.18 (0.76, 1.84)	0.460	0.677	1.31 (0.81, 2.12)	0.271	0.499	1.11 (0.67, 1.83)	0.686	0.841
r-Ins	0.98 (0.66, 1.45)	0.911	0.958	0.87 (0.57, 1.33)	0.514	0.721	0.89 (0.57, 1.38)	0.596	0.781
r-ParsOp	0.81 (0.58, 1.14)	0.236	0.461	1.20 (0.83, 1.73)	0.337	0.568	1.47 (1.00, 2.17)	0.051	0.172
r-ParsTri	1.04 (0.72, 1.51)	0.821	0.915	1.42 (0.95, 2.13)	0.084	0.237	1.36 (0.90, 2.08)	0.147	0.346
r-MedOrF	1.06 (0.63, 1.78)	0.834	0.921	0.74 (0.42, 1.32)	0.310	0.540	0.70 (0.38, 1.28)	0.247	0.473
r-LOrF	1.31 (0.61, 2.82)	0.485	0.697	0.39 (0.16, 0.90)	0.028	0.116	0.29 (0.12, 0.70)	0.006	0.038*
r-ParsOr	1.65 (0.75, 3.63)	0.213	0.433	1.71 (0.73, 3.99)	0.213	0.433	1.04 (0.44, 2.46)	0.934	0.969
r-SupF	2.15 (1.25, 3.72)	0.006	0.038*	2.97 (1.66, 5.31)	<0.001	0.003*	1.38 (0.76, 2.49)	0.290	0.520
r-Fpo	8.07 (2.63, 24.77)	<0.001	0.003*	4.48 (1.34, 15.05)	0.015	0.075	0.56 (0.17, 1.76)	0.318	0.549
r-RosMF	1.40 (0.86, 2.28)	0.179	0.390	2.68 (1.59, 4.50)	<0.001	0.003*	1.91 (1.12, 3.27)	0.018	0.084
r-CaudMF	2.73 (1.70, 4.37)	<0.001	0.001*	4.80 (2.90, 7.95)	<0.001	<0.001*	1.76 (1.05, 2.95)	0.031	0.124
r-PrC	1.06 (0.77, 1.44)	0.730	0.866	1.40 (1.00, 1.96)	0.051	0.171	1.33 (0.93, 1.89)	0.118	0.300

(B) SUBACUTE PHASE

	Sham vs. Control			**LLLT vs. Control**			**LLLT vs. Sham**		
Regions	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**
l-PrC	1.23 (0.90, 1.66)	0.189	0.404	1.48 (1.07, 2.04)	0.018	0.083	1.21 (0.86, 1.69)	0.279	0.508
l-CaudMF	2.12 (1.28, 3.53)	0.004	0.027*	2.96 (1.73, 5.06)	<0.001	0.001*	1.39 (0.81, 2.41)	0.234	0.458
l-RosMF	1.83 (1.02, 3.30)	0.043	0.153	3.16 (1.70, 5.86)	<0.001	0.004*	1.72 (0.92, 3.23)	0.091	0.250
l-Fpo	2.06 (0.68, 6.18)	0.199	0.417	1.21 (0.36, 4.00)	0.758	0.880	0.59 (0.18, 1.95)	0.384	0.610
l-SupF	2.19 (1.50, 3.21)	<0.001	0.001*	3.43 (2.29, 5.13)	<0.001	<0.001*	1.56 (1.03, 2.37)	0.035	0.133
l-ParsOr	0.66 (0.34, 1.30)	0.232	0.456	0.97 (0.47, 1.97)	0.925	0.965	1.46 (0.69, 3.08)	0.319	0.549
l-LOrF	0.70 (0.31, 1.56)	0.377	0.604	1.08 (0.46, 2.52)	0.867	0.936	1.55 (0.64, 3.72)	0.328	0.559
l-MedOrF	0.60 (0.32, 1.13)	0.117	0.298	0.74 (0.38, 1.45)	0.381	0.608	1.23 (0.61, 2.47)	0.565	0.759
l-ParsTri	1.40 (0.96, 2.05)	0.081	0.231	1.35 (0.90, 2.03)	0.144	0.341	0.96 (0.63, 1.47)	0.865	0.935
l-ParsOp	1.45 (1.02, 2.05)	0.036	0.137	1.45 (1.01, 2.10)	0.047	0.162	1.00 (0.68, 1.47)	0.986	0.994
l-Ins	0.84 (0.64, 1.09)	0.180	0.391	1.03 (0.78, 1.35)	0.859	0.932	1.23 (0.91, 1.64)	0.176	0.386

l-RosACg	1.16 (0.77, 1.75)	0.464	0.681	1.27 (0.82, 1.95)	0.284	0.514	1.09 (0.69, 1.71)	0.715	0.858
l-CaudACg	1.21 (0.79, 1.85)	0.380	0.607	1.16 (0.74, 1.83)	0.511	0.718	0.96 (0.60, 1.54)	0.871	0.938
l-IsCg	1.16 (0.80, 1.70)	0.436	0.657	0.79 (0.53, 1.19)	0.261	0.488	0.68 (0.45, 1.04)	0.075	0.220
l-PosCg	0.59 (0.47, 0.75)	<0.001	<0.001*	0.77 (0.60, 0.99)	0.039	0.144	1.29 (0.99, 1.69)	0.061	0.192
l-Tpo	1.54 (0.55, 4.29)	0.407	0.631	2.26 (0.77, 6.66)	0.138	0.333	1.47 (0.49, 4.41)	0.496	0.706
l-TrT	1.34 (0.86, 2.09)	0.189	0.404	1.43 (0.89, 2.28)	0.137	0.331	1.06 (0.65, 1.72)	0.809	0.908
l-SupT	1.07 (0.77, 1.50)	0.676	0.835	1.05 (0.73, 1.49)	0.806	0.907	0.97 (0.67, 1.41)	0.888	0.946
l-BPosSupT	1.18 (0.77, 1.82)	0.443	0.662	1.24 (0.79, 1.96)	0.346	0.576	1.05 (0.66, 1.69)	0.833	0.920
l-MT	1.08 (0.76, 1.53)	0.664	0.827	0.76 (0.52, 1.11)	0.159	0.363	0.71 (0.48, 1.05)	0.083	0.236
l-InfT	0.66 (0.37, 1.19)	0.166	0.372	0.50 (0.27, 0.93)	0.028	0.116	0.75 (0.39, 1.44)	0.387	0.613
l-EnRh	0.96 (0.32, 2.82)	0.934	0.969	1.07 (0.34, 3.37)	0.909	0.957	1.12 (0.34, 3.65)	0.852	0.929
l-PosC	2.08 (1.49, 2.90)	<0.001	<0.001*	2.69 (1.89, 3.83)	<0.001	<0.001*	1.29 (0.90, 1.86)	0.168	0.375
l-PrCun	0.86 (0.69, 1.07)	0.170	0.378	1.09 (0.86, 1.37)	0.491	0.702	1.27 (0.98, 1.63)	0.066	0.202
l-PaC	1.12 (0.85, 1.47)	0.417	0.640	1.34 (1.00, 1.79)	0.047	0.163	1.20 (0.88, 1.63)	0.248	0.475
l-SupP	1.53 (1.06, 2.21)	0.023	0.101	1.65 (1.12, 2.43)	0.012	0.062	1.08 (0.72, 1.61)	0.715	0.858
l-SuMar	1.35 (1.03, 1.77)	0.032	0.126	1.40 (1.05, 1.87)	0.023	0.100	1.04 (0.77, 1.41)	0.802	0.904
l-InfP	1.66 (1.13, 2.45)	0.011	0.058	1.44 (0.95, 2.17)	0.087	0.242	0.87 (0.56, 1.33)	0.508	0.715
l-LOc	0.98 (0.62, 1.54)	0.923	0.964	1.26 (0.78, 2.05)	0.339	0.570	1.29 (0.78, 2.13)	0.314	0.544
l-PaHip	1.77 (0.84, 3.73)	0.136	0.330	0.95 (0.42, 2.12)	0.899	0.952	0.54 (0.24, 1.22)	0.137	0.331
l-Fu	0.51 (0.32, 0.80)	0.004	0.029*	0.50 (0.31, 0.82)	0.006	0.039*	0.99 (0.59, 1.65)	0.971	0.986
l-PerCc	1.14 (0.80, 1.63)	0.458	0.675	1.31 (0.90, 1.91)	0.155	0.358	1.15 (0.77, 1.70)	0.492	0.703
l-Cun	1.21 (0.87, 1.67)	0.253	0.479	1.03 (0.73, 1.46)	0.869	0.937	0.85 (0.59, 1.23)	0.389	0.615
l-Lin	1.04 (0.74, 1.47)	0.811	0.909	0.73 (0.50, 1.05)	0.089	0.248	0.70 (0.47, 1.02)	0.066	0.202
l-Pu	0.85 (0.49, 1.49)	0.577	0.767	0.96 (0.53, 1.74)	0.891	0.948	1.13 (0.61, 2.08)	0.707	0.853
l-Pal	0.74 (0.37, 1.44)	0.373	0.600	0.75 (0.37, 1.54)	0.432	0.653	1.02 (0.48, 2.17)	0.961	0.981
l-CaN	1.85 (1.04, 3.29)	0.036	0.135	2.43 (1.33, 4.47)	0.004	0.029*	1.32 (0.70, 2.45)	0.389	0.615
l-Amg	1.06 (0.47, 2.39)	0.888	0.946	1.73 (0.74, 4.06)	0.208	0.427	1.63 (0.68, 3.93)	0.275	0.503
l-Tha	0.83 (0.46, 1.50)	0.546	0.744	0.88 (0.47, 1.64)	0.680	0.838	1.05 (0.55, 2.00)	0.879	0.941
l-Hip	0.95 (0.57, 1.58)	0.848	0.927	1.10 (0.64, 1.88)	0.725	0.863	1.16 (0.66, 2.02)	0.608	0.789
l-NAcc	2.96 (1.06, 8.27)	0.039	0.143	1.72 (0.57, 5.23)	0.336	0.567	0.58 (0.19, 1.76)	0.339	0.570
r-NAcc	3.38 (1.24, 9.21)	0.017	0.082	2.50 (0.85, 7.31)	0.095	0.258	0.74 (0.25, 2.15)	0.579	0.768
r-Hip	1.52 (0.80, 2.87)	0.201	0.419	1.14 (0.58, 2.26)	0.700	0.849	0.75 (0.38, 1.51)	0.426	0.648
r-Tha	0.61 (0.36, 1.03)	0.066	0.203	0.66 (0.38, 1.17)	0.155	0.357	1.09 (0.61, 1.96)	0.765	0.884
r-Amg	1.83 (0.80, 4.19)	0.153	0.354	1.21 (0.50, 2.94)	0.675	0.834	0.66 (0.27, 1.63)	0.368	0.596
r-CaN	2.63 (1.51, 4.58)	0.001	0.007*	2.11 (1.17, 3.82)	0.013	0.068	0.80 (0.44, 1.47)	0.479	0.692
r-Pal	0.50 (0.23, 1.07)	0.075	0.220	0.20 (0.08, 0.46)	<0.001	0.003*	0.39 (0.16, 0.97)	0.042	0.151
r-Pu	0.88 (0.55, 1.40)	0.581	0.770	0.84 (0.51, 1.38)	0.492	0.703	0.96 (0.57, 1.60)	0.871	0.938
r-Lin	0.77 (0.54, 1.08)	0.132	0.323	0.70 (0.48, 1.01)	0.056	0.181	0.91 (0.62, 1.34)	0.633	0.805
r-Cun	1.16 (0.86, 1.56)	0.339	0.570	0.88 (0.64, 1.21)	0.432	0.653	0.76 (0.54, 1.07)	0.112	0.290
r-PerCc	1.01 (0.71, 1.42)	0.975	0.988	0.89 (0.62, 1.29)	0.552	0.749	0.89 (0.60, 1.31)	0.552	0.749
r-Fu	0.62 (0.39, 0.98)	0.040	0.147	0.45 (0.28, 0.74)	0.002	0.015*	0.73 (0.44, 1.23)	0.238	0.463
r-PaHip	2.12 (0.86, 5.20)	0.102	0.271	1.01 (0.39, 2.66)	0.978	0.989	0.48 (0.18, 1.28)	0.141	0.337
r-LOc	1.38 (0.96, 1.99)	0.082	0.233	1.20 (0.82, 1.77)	0.352	0.582	0.87 (0.58, 1.31)	0.503	0.712
r-InfP	1.40 (0.89, 2.20)	0.140	0.336	1.04 (0.64, 1.68)	0.868	0.937	0.74 (0.45, 1.22)	0.236	0.461
r-SuMar	1.17 (0.85, 1.60)	0.334	0.565	0.99 (0.71, 1.38)	0.939	0.971	0.85 (0.59, 1.20)	0.350	0.581
r-SupP	1.44 (0.96, 2.16)	0.074	0.218	1.55 (1.01, 2.38)	0.045	0.157	1.07 (0.69, 1.67)	0.755	0.878
r-PaC	1.06 (0.83, 1.37)	0.631	0.805	1.12 (0.86, 1.47)	0.401	0.625	1.06 (0.79, 1.41)	0.714	0.858
r-PrCun	0.92 (0.75, 1.12)	0.404	0.629	0.99 (0.80, 1.23)	0.937	0.971	1.08 (0.85, 1.37)	0.517	0.723
r-PosC	1.69 (1.20, 2.38)	0.002	0.020*	1.83 (1.27, 2.62)	0.001	0.011*	1.08 (0.74, 1.57)	0.695	0.847
r-EnRh	0.71 (0.22, 2.23)	0.553	0.750	0.41 (0.12, 1.42)	0.158	0.361	0.58 (0.16, 2.08)	0.400	0.624
r-InfT	0.39 (0.22, 0.70)	0.001	0.014*	0.39 (0.21, 0.72)	0.003	0.021*	1.00 (0.53, 1.89)	0.989	0.995
r-MT	0.97 (0.66, 1.42)	0.869	0.937	0.80 (0.53, 1.21)	0.290	0.521	0.83 (0.54, 1.27)	0.385	0.611
r-BPosSupT	1.25 (0.79, 1.98)	0.332	0.563	0.98 (0.60, 1.61)	0.951	0.977	0.79 (0.47, 1.31)	0.351	0.581
r-SupT	0.77 (0.55, 1.06)	0.108	0.281	0.60 (0.43, 0.86)	0.005	0.032*	0.79 (0.55, 1.14)	0.202	0.421
r-TrT	1.06 (0.67, 1.67)	0.807	0.907	0.57 (0.35, 0.94)	0.028	0.114	0.54 (0.33, 0.90)	0.019	0.088
r-Tpo	0.84 (0.22, 3.28)	0.807	0.907	0.47 (0.11, 2.05)	0.312	0.542	0.55 (0.12, 2.51)	0.442	0.661

r-PosCg	0.66 (0.52, 0.84)	0.001	0.007*	0.75 (0.58, 0.96)	0.022	0.096	1.13 (0.86, 1.47)	0.381	0.608
r-IsCg	1.15 (0.79, 1.68)	0.456	0.673	0.93 (0.62, 1.39)	0.718	0.860	0.80 (0.53, 1.22)	0.310	0.540
r-CaudACg	1.17 (0.81, 1.71)	0.405	0.630	1.03 (0.69, 1.54)	0.868	0.937	0.88 (0.58, 1.34)	0.554	0.750
r-RosACg	1.33 (0.86, 2.07)	0.205	0.424	1.23 (0.77, 1.96)	0.396	0.620	0.92 (0.57, 1.50)	0.743	0.873
r-Ins	0.82 (0.56, 1.22)	0.328	0.558	0.80 (0.53, 1.21)	0.295	0.526	0.97 (0.63, 1.50)	0.903	0.954
r-ParsOp	0.88 (0.63, 1.24)	0.481	0.694	0.74 (0.51, 1.06)	0.098	0.264	0.83 (0.57, 1.22)	0.343	0.574
r-ParsTri	0.99 (0.68, 1.43)	0.951	0.976	0.89 (0.60, 1.33)	0.573	0.764	0.90 (0.59, 1.37)	0.631	0.804
r-MedOrF	0.54 (0.31, 0.92)	0.022	0.099	0.89 (0.51, 1.55)	0.682	0.839	1.66 (0.92, 3.01)	0.094	0.256
r-LOrF	0.56 (0.26, 1.21)	0.138	0.332	0.48 (0.21, 1.10)	0.083	0.236	0.86 (0.37, 2.05)	0.740	0.871
r-ParsOr	1.14 (0.51, 2.53)	0.746	0.873	1.20 (0.52, 2.80)	0.666	0.828	1.06 (0.44, 2.51)	0.902	0.954
r-SupF	2.15 (1.25, 3.71)	0.006	0.039*	2.80 (1.57, 4.99)	<0.001	0.006*	1.31 (0.72, 2.35)	0.375	0.602
r-Fpo	5.50 (1.78, 16.99)	0.003	0.024*	3.49 (1.04, 11.69)	0.042	0.152	0.64 (0.20, 2.03)	0.444	0.662
r-RosMF	1.19 (0.73, 1.95)	0.481	0.694	1.87 (1.11, 3.13)	0.018	0.083	1.57 (0.92, 2.67)	0.100	0.267
r-CaudMF	2.79 (1.74, 4.47)	<0.001	<0.001*	2.60 (1.58, 4.30)	<0.001	0.003*	0.93 (0.56, 1.56)	0.791	0.899
r-PrC	1.06 (0.78, 1.45)	0.703	0.851	1.11 (0.80, 1.55)	0.530	0.733	1.05 (0.74, 1.48)	0.798	0.902

(C) LATE-SUBACUTE PHASE

	Sham vs. Control			**LLLT vs. Control**			**LLLT vs. Sham**		
Regions	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**
l-PrC	1.03 (0.76, 1.40)	0.832	0.920	1.48 (1.07, 2.05)	0.019	0.088	1.43 (1.02, 2.02)	0.041	0.148
l-CaudMF	2.15 (1.30, 3.58)	0.003	0.024*	2.46 (1.44, 4.22)	0.001	0.011*	1.14 (0.66, 1.98)	0.634	0.806
l-RosMF	2.18 (1.21, 3.92)	0.009	0.052	2.57 (1.38, 4.78)	0.003	0.023*	1.18 (0.63, 2.22)	0.611	0.790
l-Fpo	3.34 (1.12, 9.91)	0.030	0.121	1.00 (0.29, 3.41)	0.997	0.999	0.30 (0.09, 1.01)	0.052	0.174
l-SupF	2.55 (1.74, 3.73)	<0.001	<0.001*	2.99 (1.99, 4.49)	<0.001	<0.001*	1.18 (0.77, 1.78)	0.448	0.666
l-ParsOr	0.51 (0.26, 1.01)	0.054	0.177	0.57 (0.28, 1.18)	0.132	0.323	1.12 (0.52, 2.40)	0.775	0.889
l-LOrF	0.79 (0.35, 1.77)	0.565	0.759	0.50 (0.21, 1.19)	0.117	0.299	0.63 (0.26, 1.54)	0.314	0.544
l-MedOrF	0.88 (0.47, 1.64)	0.683	0.840	0.41 (0.20, 0.82)	0.011	0.061	0.46 (0.23, 0.95)	0.036	0.137
l-ParsTri	1.37 (0.94, 2.01)	0.102	0.271	1.16 (0.77, 1.74)	0.491	0.702	0.84 (0.55, 1.29)	0.429	0.651
l-ParsOp	1.34 (0.95, 1.90)	0.098	0.264	1.24 (0.85, 1.80)	0.267	0.495	0.92 (0.62, 1.36)	0.683	0.839
l-Ins	0.85 (0.66, 1.11)	0.227	0.450	0.79 (0.60, 1.05)	0.104	0.275	0.93 (0.69, 1.25)	0.627	0.802
l-RosACg	1.18 (0.78, 1.77)	0.437	0.657	1.06 (0.68, 1.65)	0.797	0.902	0.90 (0.57, 1.43)	0.658	0.823
l-CaudACg	1.14 (0.74, 1.74)	0.556	0.752	0.91 (0.58, 1.44)	0.699	0.848	0.80 (0.50, 1.29)	0.367	0.596
l-IsCg	0.95 (0.65, 1.39)	0.780	0.892	1.07 (0.71, 1.61)	0.746	0.873	1.13 (0.74, 1.73)	0.575	0.765
l-PosCg	0.68 (0.53, 0.85)	0.001	0.011*	0.90 (0.70, 1.16)	0.430	0.651	1.34 (1.02, 1.75)	0.036	0.135
l-Tpo	1.66 (0.60, 4.62)	0.331	0.561	0.97 (0.32, 2.92)	0.954	0.978	0.58 (0.19, 1.79)	0.347	0.577
l-TrT	1.19 (0.76, 1.85)	0.443	0.662	1.24 (0.78, 1.99)	0.365	0.594	1.05 (0.64, 1.71)	0.857	0.932
l-SupT	1.19 (0.85, 1.65)	0.313	0.544	0.95 (0.66, 1.36)	0.766	0.884	0.80 (0.55, 1.16)	0.238	0.462
l-BPosSupT	1.43 (0.93, 2.19)	0.100	0.268	1.35 (0.85, 2.13)	0.202	0.420	0.94 (0.59, 1.51)	0.804	0.905
l-MT	0.90 (0.63, 1.28)	0.558	0.754	0.61 (0.41, 0.89)	0.011	0.059	0.67 (0.45, 1.01)	0.054	0.179
l-InfT	0.61 (0.34, 1.10)	0.101	0.270	0.36 (0.19, 0.68)	0.002	0.015*	0.58 (0.30, 1.13)	0.112	0.289
l-EnRh	0.93 (0.32, 2.76)	0.902	0.954	0.93 (0.29, 2.95)	0.903	0.955	1.00 (0.30, 3.26)	0.995	0.998
l-PosC	1.97 (1.41, 2.75)	<0.001	0.001*	2.31 (1.61, 3.29)	<0.001	<0.001*	1.17 (0.81, 1.70)	0.405	0.630
l-PrCun	0.97 (0.78, 1.21)	0.819	0.913	1.22 (0.96, 1.55)	0.099	0.267	1.25 (0.97, 1.61)	0.083	0.236
l-PaC	0.87 (0.66, 1.14)	0.307	0.537	1.39 (1.04, 1.87)	0.027	0.113	1.61 (1.18, 2.19)	0.003	0.022*
l-SupP	1.50 (1.04, 2.17)	0.029	0.118	1.64 (1.11, 2.43)	0.013	0.067	1.09 (0.73, 1.64)	0.667	0.828
l-SuMar	1.30 (0.99, 1.71)	0.061	0.191	1.18 (0.88, 1.59)	0.267	0.495	0.91 (0.67, 1.24)	0.553	0.750
l-InfP	1.52 (1.03, 2.25)	0.034	0.131	1.71 (1.13, 2.59)	0.012	0.063	1.12 (0.73, 1.72)	0.606	0.787
l-LOc	1.16 (0.73, 1.82)	0.529	0.732	1.01 (0.62, 1.65)	0.954	0.978	0.88 (0.53, 1.45)	0.610	0.789
l-PaHip	1.58 (0.75, 3.34)	0.231	0.455	1.35 (0.61, 3.02)	0.459	0.676	0.86 (0.38, 1.94)	0.710	0.855
l-Fu	0.58 (0.37, 0.92)	0.022	0.096	0.50 (0.30, 0.82)	0.006	0.037*	0.85 (0.51, 1.43)	0.550	0.748
l-PerCc	1.49 (1.05, 2.11)	0.027	0.112	1.15 (0.79, 1.68)	0.472	0.686	0.77 (0.52, 1.15)	0.204	0.422
l-Cun	1.49 (1.08, 2.05)	0.016	0.078	1.13 (0.79, 1.60)	0.502	0.710	0.76 (0.53, 1.09)	0.139	0.335
l-Lin	1.05 (0.75, 1.48)	0.771	0.887	0.93 (0.64, 1.34)	0.694	0.846	0.88 (0.60, 1.30)	0.526	0.730
l-Pu	0.99 (0.57, 1.74)	0.984	0.992	1.08 (0.59, 1.95)	0.812	0.910	1.08 (0.58, 2.00)	0.804	0.905
l-Pal	0.55 (0.28, 1.08)	0.084	0.237	0.59 (0.28, 1.24)	0.162	0.367	1.08 (0.50, 2.37)	0.840	0.924
l-CaN	2.61 (1.48, 4.63)	0.001	0.010*	1.88 (1.02, 3.46)	0.045	0.157	0.72 (0.38, 1.34)	0.299	0.530

l-Amg	0.98 (0.43, 2.21)	0.954	0.978	0.68 (0.28, 1.66)	0.400	0.624	0.70 (0.28, 1.74)	0.443	0.662
l-Tha	0.70 (0.39, 1.27)	0.239	0.464	0.75 (0.40, 1.41)	0.378	0.605	1.07 (0.56, 2.05)	0.828	0.918
l-Hip	0.59 (0.35, 0.99)	0.045	0.158	0.93 (0.54, 1.60)	0.806	0.906	1.58 (0.89, 2.79)	0.116	0.295
l-NAcc	3.34 (1.20, 9.33)	0.021	0.095	1.62 (0.53, 4.97)	0.395	0.620	0.49 (0.16, 1.48)	0.204	0.422
r-NAcc	4.13 (1.52, 11.21)	0.005	0.036*	0.67 (0.21, 2.18)	0.510	0.717	0.16 (0.05, 0.52)	0.002	0.019*
r-Hip	1.19 (0.63, 2.25)	0.598	0.782	1.38 (0.70, 2.72)	0.357	0.586	1.16 (0.58, 2.33)	0.678	0.836
r-Tha	0.55 (0.32, 0.93)	0.026	0.110	0.65 (0.37, 1.15)	0.139	0.335	1.19 (0.66, 2.15)	0.556	0.752
r-Amg	1.49 (0.65, 3.42)	0.349	0.579	1.19 (0.49, 2.91)	0.706	0.853	0.80 (0.32, 1.99)	0.628	0.803
r-CaN	2.48 (1.42, 4.33)	0.001	0.013*	2.36 (1.30, 4.27)	0.005	0.032*	0.95 (0.52, 1.74)	0.866	0.936
r-Pal	0.36 (0.16, 0.77)	0.009	0.051	0.37 (0.16, 0.85)	0.019	0.088	1.03 (0.42, 2.51)	0.954	0.978
r-Pu	0.65 (0.41, 1.05)	0.077	0.224	0.85 (0.52, 1.40)	0.525	0.729	1.30 (0.77, 2.19)	0.329	0.560
r-Lin	0.86 (0.61, 1.21)	0.383	0.609	0.85 (0.59, 1.24)	0.400	0.624	0.99 (0.67, 1.47)	0.976	0.988
r-Cun	1.31 (0.97, 1.76)	0.075	0.219	1.21 (0.88, 1.67)	0.239	0.464	0.93 (0.66, 1.30)	0.655	0.820
r-PerCc	1.30 (0.92, 1.83)	0.133	0.325	1.07 (0.74, 1.55)	0.718	0.860	0.82 (0.56, 1.21)	0.325	0.556
r-Fu	0.52 (0.32, 0.82)	0.005	0.036*	0.75 (0.46, 1.22)	0.246	0.472	1.44 (0.86, 2.42)	0.161	0.365
r-PaHip	0.89 (0.36, 2.21)	0.797	0.902	1.04 (0.39, 2.75)	0.934	0.969	1.17 (0.43, 3.18)	0.752	0.876
r-LOc	1.42 (0.98, 2.04)	0.060	0.191	1.29 (0.87, 1.91)	0.201	0.419	0.91 (0.61, 1.37)	0.659	0.823
r-InfP	1.37 (0.87, 2.15)	0.170	0.378	1.56 (0.96, 2.51)	0.071	0.212	1.14 (0.69, 1.86)	0.614	0.793
r-SuMar	1.37 (1.00, 1.87)	0.052	0.173	1.23 (0.88, 1.73)	0.224	0.446	0.90 (0.63, 1.29)	0.576	0.766
r-SupP	1.43 (0.95, 2.14)	0.084	0.237	2.02 (1.32, 3.10)	0.001	0.012*	1.42 (0.91, 2.21)	0.123	0.309
r-PaC	0.86 (0.66, 1.11)	0.234	0.459	1.20 (0.91, 1.58)	0.189	0.404	1.40 (1.05, 1.88)	0.023	0.100
r-PrCun	0.96 (0.78, 1.18)	0.687	0.842	1.25 (1.00, 1.55)	0.050	0.170	1.30 (1.02, 1.65)	0.031	0.124
r-PosC	1.42 (1.01, 2.00)	0.045	0.158	2.20 (1.53, 3.16)	<0.001	≤0.001*	1.55 (1.06, 2.26)	0.024	0.104
r-EnRh	0.52 (0.16, 1.66)	0.270	0.498	0.32 (0.09, 1.13)	0.078	0.225	0.61 (0.17, 2.27)	0.465	0.681
r-InfT	0.37 (0.21, 0.65)	0.001	0.007*	0.38 (0.21, 0.71)	0.002	0.019*	1.04 (0.55, 1.99)	0.899	0.952
r-MT	0.86 (0.59, 1.27)	0.449	0.666	0.67 (0.44, 1.01)	0.058	0.186	0.77 (0.50, 1.20)	0.249	0.475
r-BPosSupT	1.35 (0.85, 2.13)	0.201	0.419	1.16 (0.71, 1.90)	0.558	0.753	0.86 (0.52, 1.43)	0.563	0.757
r-SupT	0.77 (0.55, 1.06)	0.112	0.288	0.71 (0.50, 1.01)	0.058	0.185	0.93 (0.64, 1.34)	0.682	0.839
r-TrT	1.06 (0.67, 1.67)	0.807	0.907	0.75 (0.46, 1.23)	0.250	0.476	0.71 (0.42, 1.18)	0.183	0.397
r-Tpo	0.78 (0.20, 3.02)	0.715	0.858	0.20 (0.04, 0.95)	0.043	0.152	0.26 (0.05, 1.26)	0.095	0.258
r-PosCg	0.68 (0.53, 0.85)	0.001	0.011*	0.81 (0.63, 1.04)	0.103	0.274	1.20 (0.91, 1.57)	0.188	0.402
r-IsCg	1.02 (0.70, 1.48)	0.928	0.966	1.05 (0.70, 1.57)	0.818	0.913	1.03 (0.68, 1.57)	0.889	0.947
r-CaudACg	0.95 (0.65, 1.39)	0.807	0.907	0.85 (0.57, 1.28)	0.438	0.658	0.89 (0.59, 1.36)	0.598	0.782
r-RosACg	1.01 (0.64, 1.57)	0.980	0.990	0.75 (0.46, 1.22)	0.240	0.465	0.74 (0.45, 1.23)	0.250	0.477
r-Ins	1.04 (0.70, 1.53)	0.854	0.930	0.86 (0.57, 1.32)	0.498	0.708	0.83 (0.54, 1.29)	0.413	0.637
r-ParsOp	1.17 (0.83, 1.64)	0.366	0.595	0.72 (0.50, 1.04)	0.083	0.235	0.62 (0.42, 0.91)	0.014	0.072
r-ParsTri	1.12 (0.77, 1.62)	0.554	0.750	1.06 (0.71, 1.58)	0.765	0.884	0.95 (0.63, 1.44)	0.811	0.909
r-MedOrF	0.51 (0.30, 0.87)	0.014	0.071	0.59 (0.33, 1.05)	0.070	0.211	1.15 (0.62, 2.13)	0.659	0.823
r-LOrF	0.74 (0.34, 1.59)	0.435	0.656	0.86 (0.38, 1.95)	0.715	0.858	1.17 (0.50, 2.73)	0.723	0.862
r-ParsOr	0.96 (0.43, 2.13)	0.913	0.958	1.33 (0.57, 3.08)	0.512	0.719	1.39 (0.58, 3.31)	0.461	0.678
r-SupF	2.46 (1.43, 4.25)	0.001	0.012*	2.40 (1.34, 4.28)	0.003	0.024*	0.97 (0.54, 1.76)	0.929	0.966
r-Fpo	6.95 (2.26, 21.37)	0.001	0.008*	4.15 (1.24, 13.86)	0.021	0.093	0.60 (0.19, 1.89)	0.381	0.608
r-RosMF	1.38 (0.85, 2.25)	0.195	0.411	1.88 (1.12, 3.15)	0.017	0.082	1.36 (0.80, 2.32)	0.261	0.488
r-CaudMF	2.93 (1.83, 4.69)	<0.001	≤0.001*	2.95 (1.78, 4.88)	<0.001	0.001*	1.01 (0.60, 1.68)	0.977	0.989
r-PrC	1.12 (0.82, 1.53)	0.471	0.686	1.32 (0.95, 1.84)	0.101	0.269	1.18 (0.83, 1.67)	0.355	0.584

Supplementary Table 2. The odds ratio (*OR*), their associated 95% confidence interval (95% CI), uncorrected p-values (*p*), and false discovery rate adjusted p-values (p_{fdr}) to assess the association between nodal centrality and TBI recovery phase (Subacute vs. Acute, and Late-subacute vs. Subacute) in the treatment groups (Sham and LLLT). The order of brain regions in each comparison below is the same as that in the connectograms starting from l-PrC. * represents significant association at $p_{fdr} < 0.05$. Underlined p_{fdr} represents that significant association ($p_{fdr} < 0.05$) in the corresponding brain region was consistently observed in the comparisons of nodal centrality between different TBI recovery phases of the same treatment group.

(A) SUBACUTE vs. ACUTE

	Sham			**LLLT**		
Regions	**Odds Ratio, *OR* (95% CI)**	***p***	p_{fdr}	**Odds Ratio, *OR* (95% CI)**	***p***	p_{fdr}
l-PrC	1.09 (0.94, 1.26)	0.238	0.462	0.95 (0.80, 1.13)	0.586	0.774
l-CaudMF	1.08 (0.92, 1.28)	0.346	0.576	1.00 (0.82, 1.21)	0.991	0.996
l-RosMF	0.73 (0.61, 0.86)	<0.001	0.003*	0.97 (0.80, 1.16)	0.715	0.858
l-Fpo	0.71 (0.49, 1.02)	0.066	0.202	0.89 (0.51, 1.57)	0.699	0.848
l-SupF	0.87 (0.76, 1.01)	0.070	0.210	1.24 (1.04, 1.47)	0.014	0.071
l-ParsOr	1.02 (0.80, 1.31)	0.847	0.927	1.11 (0.84, 1.46)	0.473	0.687
l-LOrF	0.64 (0.51, 0.80)	<0.001	0.001*	1.78 (1.35, 2.36)	<0.001	<u>0.001</u>*
l-MedOrF	0.58 (0.46, 0.73)	<0.001	<u><0.001</u>*	1.43 (1.05, 1.95)	0.024	0.104
l-ParsTri	1.13 (0.94, 1.35)	0.194	0.410	1.16 (0.93, 1.46)	0.186	0.401
l-ParsOp	1.18 (1.00, 1.38)	0.047	0.162	1.08 (0.89, 1.32)	0.430	0.651
l-Ins	0.89 (0.77, 1.04)	0.135	0.329	1.18 (0.98, 1.41)	0.082	0.233
l-RosACg	1.12 (0.92, 1.36)	0.254	0.481	0.72 (0.58, 0.90)	0.004	0.029*
l-CaudACg	1.07 (0.92, 1.26)	0.362	0.591	1.18 (0.97, 1.45)	0.100	0.268
l-IsCg	1.02 (0.87, 1.19)	0.813	0.910	1.04 (0.84, 1.28)	0.716	0.858
l-PosCg	0.88 (0.76, 1.01)	0.077	0.224	0.99 (0.83, 1.17)	0.880	0.942
l-Tpo	1.06 (0.81, 1.39)	0.673	0.832	2.69 (1.84, 3.91)	<0.001	<u><0.001</u>*
l-TrT	1.15 (0.97, 1.35)	0.102	0.271	1.13 (0.93, 1.38)	0.228	0.451
l-SupT	1.11 (0.96, 1.29)	0.160	0.364	1.41 (1.17, 1.70)	<0.001	0.004*
l-BPosSupT	1.13 (0.94, 1.35)	0.181	0.393	1.16 (0.93, 1.44)	0.185	0.400
l-MT	1.21 (1.03, 1.42)	0.019	0.088	1.48 (1.19, 1.84)	<0.001	0.005*
l-InfT	1.00 (0.83, 1.22)	0.960	0.980	1.29 (0.99, 1.69)	0.061	0.193
l-EnRh	1.00 (0.75, 1.33)	1.000	1.000	1.39 (0.94, 2.04)	0.096	0.259
l-PosC	0.97 (0.84, 1.13)	0.701	0.849	1.00 (0.84, 1.19)	0.982	0.992
l-PrCun	0.93 (0.81, 1.07)	0.322	0.552	1.11 (0.93, 1.31)	0.252	0.478
l-PaC	1.10 (0.95, 1.28)	0.190	0.405	1.02 (0.86, 1.21)	0.816	0.912
l-SupP	0.97 (0.84, 1.12)	0.654	0.820	1.00 (0.84, 1.20)	0.992	0.997
l-SuMar	1.16 (1.01, 1.34)	0.040	0.147	1.14 (0.96, 1.36)	0.145	0.342
l-InfP	1.12 (0.96, 1.30)	0.140	0.336	0.98 (0.82, 1.17)	0.815	0.912
l-LOc	1.07 (0.90, 1.28)	0.421	0.644	1.45 (1.18, 1.78)	<0.001	0.006*
l-PaHip	1.24 (0.99, 1.56)	0.061	0.192	0.85 (0.62, 1.16)	0.303	0.534
l-Fu	0.84 (0.71, 0.99)	0.036	0.135	0.99 (0.81, 1.21)	0.891	0.948
l-PerCc	1.09 (0.92, 1.29)	0.338	0.569	1.29 (1.05, 1.58)	0.013	0.069
l-Cun	0.94 (0.80, 1.10)	0.444	0.662	1.03 (0.84, 1.26)	0.786	0.895
l-Lin	1.06 (0.91, 1.24)	0.435	0.656	0.98 (0.80, 1.19)	0.802	0.904
l-Pu	1.07 (0.88, 1.30)	0.507	0.715	0.95 (0.75, 1.20)	0.664	0.827
l-Pal	2.32 (1.59, 3.38)	<0.001	<0.001*	0.67 (0.47, 0.96)	0.030	0.120
l-CaN	1.04 (0.86, 1.26)	0.695	0.847	1.37 (1.09, 1.73)	0.008	0.048*
l-Amg	0.98 (0.75, 1.29)	0.887	0.946	2.78 (1.89, 4.08)	<0.001	<0.001*
l-Tha	0.98 (0.83, 1.16)	0.797	0.902	0.99 (0.80, 1.22)	0.920	0.962
l-Hip	1.04 (0.86, 1.26)	0.692	0.845	0.96 (0.77, 1.21)	0.745	0.873
l-NAcc	1.36 (0.97, 1.90)	0.075	0.219	0.81 (0.49, 1.33)	0.398	0.622

r-NAcc	1.11 (0.81, 1.51)	0.527	0.731	1.21 (0.76, 1.93)	0.412	0.636
r-Hip	0.88 (0.73, 1.05)	0.157	0.360	1.19 (0.92, 1.55)	0.191	0.406
r-Tha	1.18 (0.99, 1.40)	0.067	0.204	0.74 (0.60, 0.91)	0.004	0.029*
r-Amg	0.98 (0.76, 1.27)	0.892	0.948	1.17 (0.79, 1.73)	0.446	0.664
r-CaN	1.15 (0.96, 1.39)	0.137	0.332	0.91 (0.72, 1.15)	0.425	0.647
r-Pal	1.49 (1.05, 2.10)	0.025	0.107	0.32 (0.20, 0.52)	<0.001	<0.001*
r-Pu	1.25 (1.03, 1.52)	0.025	0.107	1.10 (0.86, 1.40)	0.441	0.661
r-Lin	0.93 (0.80, 1.09)	0.398	0.622	1.08 (0.88, 1.32)	0.457	0.674
r-Cun	1.04 (0.89, 1.21)	0.658	0.823	0.83 (0.68, 1.02)	0.076	0.222
r-PerCc	0.94 (0.80, 1.11)	0.494	0.704	0.83 (0.68, 1.02)	0.080	0.230
r-Fu	1.30 (1.10, 1.54)	0.002	0.016*	0.84 (0.68, 1.03)	0.099	0.266
r-PaHip	1.02 (0.82, 1.27)	0.864	0.935	1.11 (0.78, 1.56)	0.568	0.761
r-LOc	1.03 (0.87, 1.21)	0.766	0.884	1.22 (0.99, 1.51)	0.065	0.200
r-InfP	1.09 (0.93, 1.26)	0.293	0.524	0.73 (0.60, 0.88)	0.001	0.011*
r-SuMar	0.91 (0.79, 1.06)	0.215	0.434	0.78 (0.65, 0.94)	0.010	0.057
r-SupP	0.89 (0.77, 1.04)	0.137	0.331	0.81 (0.68, 0.96)	0.018	0.086
r-PaC	1.19 (1.03, 1.38)	0.020	0.092	0.93 (0.78, 1.11)	0.422	0.644
r-PrCun	1.01 (0.88, 1.17)	0.855	0.931	1.11 (0.93, 1.32)	0.241	0.467
r-PosC	0.98 (0.84, 1.14)	0.755	0.878	0.79 (0.65, 0.94)	0.009	0.051
r-EnRh	1.25 (0.90, 1.74)	0.183	0.396	1.06 (0.60, 1.87)	0.835	0.921
r-InfT	1.08 (0.87, 1.32)	0.488	0.700	1.12 (0.86, 1.44)	0.395	0.620
r-MT	0.99 (0.85, 1.17)	0.935	0.969	1.66 (1.34, 2.07)	<0.001	<0.001*
r-BPosSupT	1.04 (0.87, 1.25)	0.640	0.810	1.41 (1.10, 1.80)	0.007	0.041*
r-SupT	0.79 (0.68, 0.92)	0.002	0.020*	1.00 (0.82, 1.22)	0.988	0.995
r-TrT	1.10 (0.93, 1.31)	0.269	0.497	0.51 (0.40, 0.64)	<0.001	<0.001*
r-Tpo	0.87 (0.65, 1.16)	0.333	0.563	1.85 (1.02, 3.35)	0.042	0.152
r-PosCg	0.97 (0.84, 1.12)	0.631	0.805	0.95 (0.80, 1.13)	0.584	0.772
r-IsCg	0.93 (0.80, 1.09)	0.375	0.602	0.96 (0.79, 1.18)	0.721	0.861
r-CaudACg	1.19 (1.02, 1.38)	0.030	0.121	1.05 (0.86, 1.27)	0.640	0.810
r-RosACg	1.13 (0.93, 1.36)	0.223	0.445	0.94 (0.74, 1.19)	0.582	0.770
r-Ins	0.84 (0.72, 0.98)	0.028	0.114	0.92 (0.76, 1.12)	0.412	0.636
r-ParsOp	1.09 (0.92, 1.28)	0.326	0.557	0.61 (0.50, 0.75)	<0.001	<0.001*
r-ParsTri	0.95 (0.79, 1.13)	0.550	0.748	0.63 (0.50, 0.78)	<0.001	<0.001*
r-MedOrF	0.51 (0.40, 0.64)	<0.001	<0.001*	1.20 (0.89, 1.62)	0.230	0.454
r-LOrF	0.42 (0.33, 0.54)	<0.001	<0.001*	1.25 (0.86, 1.79)	0.240	0.465
r-ParsOr	0.69 (0.53, 0.90)	0.005	0.035*	0.70 (0.52, 0.96)	0.025	0.105
r-SupF	1.00 (0.86, 1.15)	0.970	0.986	0.94 (0.79, 1.12)	0.523	0.728
r-Fpo	0.68 (0.49, 0.94)	0.021	0.096	0.78 (0.49, 1.25)	0.299	0.530
r-RosMF	0.85 (0.71, 1.02)	0.082	0.232	0.70 (0.58, 0.85)	<0.001	0.003*
r-CaudMF	1.02 (0.86, 1.21)	0.794	0.900	0.54 (0.44, 0.67)	<0.001	<0.001*
r-PrC	1.01 (0.87, 1.17)	0.940	0.971	0.79 (0.66, 0.95)	0.011	0.060

(B) LATE-SUBACUTE vs. SUBACUTE

	Sham			**LLLT**		
Regions	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**	**Odds Ratio, *OR* (95% CI)**	***p***	***p*$_{fdr}$**
l-PrC	0.84 (0.73, 0.97)	0.021	0.095	1.00 (0.85, 1.18)	0.996	0.999
l-CaudMF	1.01 (0.86, 1.20)	0.865	0.936	0.83 (0.69, 1.00)	0.045	0.157
l-RosMF	1.19 (1.00, 1.41)	0.046	0.159	0.81 (0.68, 0.98)	0.026	0.108
l-Fpo	1.62 (1.13, 2.32)	0.008	0.047*	0.83 (0.46, 1.51)	0.543	0.743
l-SupF	1.16 (1.01, 1.34)	0.042	0.152	0.87 (0.74, 1.03)	0.098	0.264
l-ParsOr	0.77 (0.60, 1.00)	0.052	0.173	0.59 (0.45, 0.78)	<0.001	0.003*
l-LOrF	1.14 (0.90, 1.43)	0.282	0.512	0.46 (0.35, 0.62)	<0.001	<u>≤0.001</u>*
l-MedOrF	1.45 (1.15, 1.84)	0.002	<u>0.016</u>*	0.55 (0.39, 0.76)	<0.001	0.005*
l-ParsTri	0.98 (0.82, 1.17)	0.819	0.914	0.85 (0.69, 1.05)	0.140	0.335
l-ParsOp	0.93 (0.79, 1.08)	0.334	0.565	0.85 (0.71, 1.02)	0.085	0.239
l-Ins	1.02 (0.88, 1.18)	0.816	0.912	0.77 (0.65, 0.92)	0.004	0.028*

l-RosACg	1.01 (0.84, 1.22)	0.922	0.963	0.84 (0.67, 1.05)	0.118	0.300
l-CaudACg	0.94 (0.80, 1.10)	0.428	0.650	0.78 (0.65, 0.94)	0.010	0.054
l-IsCg	0.82 (0.70, 0.95)	0.011	0.060	1.35 (1.12, 1.63)	0.002	0.016*
l-PosCg	1.14 (0.98, 1.31)	0.084	0.237	1.17 (1.00, 1.38)	0.050	0.169
l-Tpo	1.08 (0.83, 1.40)	0.583	0.771	0.43 (0.30, 0.61)	<0.001	<0.001*
l-TrT	0.88 (0.75, 1.04)	0.142	0.339	0.87 (0.72, 1.05)	0.153	0.354
l-SupT	1.10 (0.95, 1.28)	0.180	0.392	0.91 (0.76, 1.08)	0.270	0.498
l-BPosSupT	1.21 (1.02, 1.44)	0.031	0.122	1.08 (0.89, 1.32)	0.439	0.659
l-MT	0.83 (0.71, 0.98)	0.027	0.111	0.79 (0.64, 0.98)	0.033	0.129
l-InfT	0.93 (0.76, 1.13)	0.449	0.666	0.72 (0.55, 0.94)	0.017	0.082
l-EnRh	0.98 (0.73, 1.30)	0.881	0.943	0.87 (0.63, 1.21)	0.404	0.629
l-PosC	0.95 (0.81, 1.10)	0.486	0.698	0.86 (0.72, 1.02)	0.074	0.218
l-PrCun	1.14 (0.98, 1.31)	0.080	0.229	1.12 (0.96, 1.32)	0.154	0.355
l-PaC	0.77 (0.67, 0.90)	0.001	0.008*	1.04 (0.88, 1.22)	0.659	0.823
l-SupP	0.98 (0.85, 1.14)	0.822	0.915	1.00 (0.84, 1.18)	0.975	0.988
l-SuMar	0.96 (0.84, 1.11)	0.611	0.790	0.84 (0.71, 1.00)	0.045	0.158
l-InfP	0.92 (0.79, 1.06)	0.258	0.485	1.19 (1.00, 1.42)	0.053	0.175
l-LOc	1.18 (1.00, 1.40)	0.052	0.173	0.80 (0.66, 0.97)	0.027	0.111
l-PaHip	0.89 (0.72, 1.12)	0.327	0.558	1.43 (1.06, 1.92)	0.018	0.086
l-Fu	1.15 (0.97, 1.35)	0.100	0.267	0.99 (0.82, 1.20)	0.929	0.966
l-PerCc	1.30 (1.10, 1.53)	0.002	0.015*	0.88 (0.72, 1.06)	0.179	0.390
l-Cun	1.23 (1.05, 1.44)	0.009	0.052	1.10 (0.91, 1.32)	0.344	0.574
l-Lin	1.01 (0.87, 1.17)	0.907	0.956	1.28 (1.06, 1.54)	0.010	0.054
l-Pu	1.17 (0.96, 1.41)	0.116	0.295	1.12 (0.90, 1.40)	0.309	0.539
l-Pal	0.74 (0.54, 1.03)	0.074	0.218	0.79 (0.54, 1.15)	0.215	0.434
l-CaN	1.41 (1.18, 1.69)	<0.001	0.003*	0.77 (0.62, 0.96)	0.018	0.083
l-Amg	0.92 (0.70, 1.22)	0.562	0.756	0.40 (0.28, 0.56)	<0.001	<0.001*
l-Tha	0.84 (0.71, 1.00)	0.049	0.166	0.86 (0.71, 1.04)	0.125	0.312
l-Hip	0.62 (0.50, 0.77)	<0.001	<0.001*	0.85 (0.68, 1.06)	0.145	0.342
l-NAcc	1.13 (0.83, 1.54)	0.433	0.654	0.94 (0.59, 1.49)	0.801	0.904
r-NAcc	1.22 (0.91, 1.64)	0.181	0.393	0.27 (0.15, 0.49)	<0.001	<0.001*
r-Hip	0.78 (0.64, 0.95)	0.014	0.073	1.21 (0.96, 1.52)	0.112	0.288
r-Tha	0.90 (0.76, 1.07)	0.230	0.454	0.98 (0.81, 1.19)	0.852	0.929
r-Amg	0.81 (0.62, 1.07)	0.138	0.332	0.98 (0.69, 1.40)	0.921	0.963
r-CaN	0.94 (0.78, 1.13)	0.538	0.738	1.11 (0.89, 1.40)	0.346	0.576
r-Pal	0.71 (0.51, 1.00)	0.051	0.171	1.87 (1.13, 3.09)	0.015	0.074
r-Pu	0.75 (0.61, 0.91)	0.004	0.027*	1.01 (0.81, 1.27)	0.922	0.963
r-Lin	1.12 (0.96, 1.31)	0.161	0.366	1.22 (1.02, 1.47)	0.033	0.129
r-Cun	1.13 (0.97, 1.32)	0.114	0.293	1.38 (1.14, 1.66)	0.001	0.008*
r-PerCc	1.29 (1.10, 1.52)	0.002	0.018*	1.20 (0.98, 1.46)	0.074	0.218
r-Fu	0.84 (0.71, 0.99)	0.039	0.143	1.65 (1.36, 2.01)	<0.001	<0.001*
r-PaHip	0.42 (0.32, 0.55)	<0.001	<0.001*	1.03 (0.73, 1.44)	0.874	0.939
r-LOc	1.03 (0.87, 1.21)	0.767	0.885	1.07 (0.88, 1.31)	0.485	0.697
r-InfP	0.98 (0.84, 1.14)	0.757	0.879	1.49 (1.24, 1.79)	<0.001	<0.001*
r-SuMar	1.17 (1.01, 1.35)	0.036	0.137	1.25 (1.05, 1.49)	0.013	0.068
r-SupP	0.99 (0.85, 1.15)	0.877	0.941	1.30 (1.10, 1.54)	0.002	0.017*
r-PaC	0.80 (0.69, 0.93)	0.004	0.028*	1.07 (0.91, 1.26)	0.421	0.644
r-PrCun	1.05 (0.91, 1.21)	0.537	0.737	1.26 (1.07, 1.48)	0.006	0.037*
r-PosC	0.84 (0.72, 0.98)	0.026	0.110	1.20 (1.01, 1.43)	0.035	0.135
r-EnRh	0.74 (0.53, 1.03)	0.077	0.223	0.79 (0.49, 1.28)	0.338	0.569
r-InfT	0.93 (0.76, 1.15)	0.523	0.728	0.98 (0.77, 1.25)	0.867	0.936
r-MT	0.89 (0.76, 1.05)	0.158	0.362	0.83 (0.68, 1.02)	0.082	0.232
r-BPosSupT	1.07 (0.90, 1.29)	0.434	0.655	1.18 (0.94, 1.48)	0.160	0.365
r-SupT	1.00 (0.86, 1.17)	0.969	0.985	1.18 (0.97, 1.43)	0.090	0.249
r-TrT	1.00 (0.84, 1.19)	1.000	1.000	1.30 (1.04, 1.64)	0.024	0.104
r-Tpo	0.92 (0.68, 1.25)	0.588	0.775	0.43 (0.21, 0.87)	0.019	0.086

r-PosCg	1.02 (0.88, 1.18)	0.796	0.901	1.09 (0.92, 1.28)	0.326	0.557
r-IsCg	0.88 (0.75, 1.04)	0.127	0.315	1.13 (0.93, 1.37)	0.210	0.428
r-CaudACg	0.81 (0.70, 0.95)	0.009	0.052	0.82 (0.69, 0.99)	0.038	0.142
r-RosACg	0.76 (0.62, 0.92)	0.005	0.035*	0.61 (0.47, 0.78)	<0.001	0.002*
r-Ins	1.26 (1.08, 1.47)	0.003	0.023*	1.08 (0.90, 1.30)	0.413	0.637
r-ParsOp	1.32 (1.13, 1.55)	0.001	0.007*	0.98 (0.80, 1.20)	0.848	0.927
r-ParsTri	1.13 (0.95, 1.35)	0.172	0.381	1.19 (0.96, 1.47)	0.107	0.281
r-MedOrF	0.95 (0.73, 1.25)	0.725	0.863	0.66 (0.49, 0.89)	0.007	0.044*
r-LOrF	1.32 (1.02, 1.72)	0.037	0.138	1.79 (1.32, 2.41)	<0.001	0.002*
r-ParsOr	0.84 (0.63, 1.12)	0.231	0.455	1.10 (0.83, 1.47)	0.510	0.717
r-SupF	1.15 (0.99, 1.32)	0.062	0.194	0.86 (0.73, 1.01)	0.063	0.195
r-Fpo	1.26 (0.90, 1.77)	0.172	0.381	1.19 (0.75, 1.88)	0.464	0.681
r-RosMF	1.16 (0.97, 1.39)	0.108	0.282	1.01 (0.83, 1.21)	0.952	0.977
r-CaudMF	1.05 (0.89, 1.24)	0.575	0.765	1.13 (0.93, 1.38)	0.214	0.434
r-PrC	1.06 (0.91, 1.22)	0.475	0.689	1.19 (1.00, 1.41)	0.045	0.157

Supplementary Table 3. The odds ratio (*OR*), their associated 95% confidence interval (95% CI), uncorrected p-values (*p*), and false discovery rate adjusted p-values (p_{fdr}) to assess the association between the temporal differences in nodal centrality (Subacute vs. Acute, and Late-subacute vs. Subacute) and treatment group (LLLT vs. Sham). The order of brain regions in each comparison below is the same as that in the connectograms starting from l-PrC. * represents significant association at $p_{fdr} < 0.05$. Underlined p_{fdr} represents that significant association ($p_{fdr} < 0.05$) in the corresponding brain region was consistently observed in the comparisons of temporal differences in nodal centrality between the two treatment groups.

(A) SUBACUTE vs. ACUTE

	LLLT vs. Sham		
Regions	**Odds Ratio, *OR* (95% CI)**	***p***	p_{fdr}
l-PrC	0.87 (0.70, 1.09)	0.240	0.465
l-CaudMF	0.92 (0.71, 1.19)	0.531	0.733
l-RosMF	1.33 (1.03, 1.71)	0.026	0.111
l-Fpo	1.26 (0.64, 2.47)	0.498	0.708
l-SupF	1.42 (1.13, 1.78)	0.002	0.019*
l-ParsOr	1.08 (0.74, 1.57)	0.684	0.840
l-LOrF	2.78 (1.95, 3.98)	<0.001	<u>≤0.001</u>*
l-MedOrF	2.46 (1.67, 3.62)	<0.001	<u>≤0.001</u>*
l-ParsTri	1.03 (0.77, 1.38)	0.828	0.918
l-ParsOp	0.92 (0.72, 1.18)	0.521	0.726
l-Ins	1.32 (1.04, 1.67)	0.022	0.097
l-RosACg	0.65 (0.48, 0.87)	0.004	0.026*
l-CaudACg	1.10 (0.85, 1.42)	0.457	0.673
l-IsCg	1.02 (0.79, 1.32)	0.879	0.941
l-PosCg	1.12 (0.90, 1.41)	0.308	0.538
l-Tpo	2.53 (1.59, 4.03)	<0.001	<u>0.001</u>*
l-TrT	0.99 (0.76, 1.27)	0.909	0.957
l-SupT	1.27 (1.00, 1.61)	0.049	0.167
l-BPosSupT	1.02 (0.77, 1.36)	0.870	0.938
l-MT	1.22 (0.93, 1.60)	0.152	0.352
l-InfT	1.29 (0.92, 1.79)	0.137	0.331
l-EnRh	1.39 (0.86, 2.24)	0.181	0.393
l-PosC	1.03 (0.81, 1.30)	0.817	0.913
l-PrCun	1.19 (0.95, 1.49)	0.130	0.320
l-PaC	0.93 (0.74, 1.16)	0.502	0.711
l-SupP	1.03 (0.82, 1.30)	0.771	0.887
l-SuMar	0.98 (0.78, 1.23)	0.873	0.939
l-InfP	0.88 (0.69, 1.11)	0.267	0.495
l-LOc	1.35 (1.03, 1.77)	0.031	0.124
l-PaHip	0.68 (0.46, 1.01)	0.053	0.176
l-Fu	1.18 (0.91, 1.53)	0.223	0.445
l-PerCc	1.19 (0.91, 1.55)	0.203	0.421
l-Cun	1.09 (0.85, 1.41)	0.492	0.703
l-Lin	0.92 (0.72, 1.18)	0.498	0.708
l-Pu	0.89 (0.65, 1.21)	0.447	0.665
l-Pal	0.29 (0.17, 0.49)	<0.001	<0.001*
l-CaN	1.32 (0.98, 1.78)	0.072	0.213
l-Amg	2.83 (1.77, 4.54)	<0.001	<u>≤0.001</u>*
l-Tha	1.01 (0.78, 1.32)	0.934	0.969
l-Hip	0.93 (0.69, 1.25)	0.614	0.793
l-NAcc	0.59 (0.33, 1.08)	0.089	0.248

r-NAcc	1.10 (0.63, 1.92)	0.741	0.872
r-Hip	1.36 (0.99, 1.88)	0.060	0.190
r-Tha	0.63 (0.48, 0.82)	0.001	0.008*
r-Amg	1.19 (0.74, 1.91)	0.477	0.690
r-CaN	0.79 (0.58, 1.07)	0.121	0.306
r-Pal	0.21 (0.12, 0.39)	<0.001	<0.001*
r-Pu	0.88 (0.65, 1.20)	0.424	0.646
r-Lin	1.15 (0.90, 1.49)	0.268	0.496
r-Cun	0.80 (0.62, 1.04)	0.095	0.258
r-PerCc	0.88 (0.68, 1.15)	0.355	0.584
r-Fu	0.64 (0.49, 0.84)	0.001	0.012*
r-PaHip	1.08 (0.72, 1.63)	0.698	0.848
r-LOc	1.19 (0.91, 1.56)	0.204	0.422
r-InfP	0.67 (0.52, 0.86)	0.001	0.013*
r-SuMar	0.86 (0.68, 1.09)	0.215	0.435
r-SupP	0.90 (0.72, 1.14)	0.396	0.620
r-PaC	0.78 (0.62, 0.98)	0.035	0.133
r-PrCun	1.09 (0.87, 1.37)	0.431	0.652
r-PosC	0.80 (0.63, 1.02)	0.072	0.213
r-EnRh	0.85 (0.44, 1.64)	0.627	0.802
r-InfT	1.04 (0.75, 1.44)	0.821	0.915
r-MT	1.67 (1.28, 2.19)	<0.001	0.003*
r-BPosSupT	1.35 (0.99, 1.83)	0.056	0.183
r-SupT	1.26 (0.98, 1.62)	0.070	0.210
r-TrT	0.46 (0.34, 0.61)	<0.001	<0.001*
r-Tpo	2.14 (1.10, 4.14)	0.024	0.105
r-PosCg	0.99 (0.79, 1.24)	0.908	0.956
r-IsCg	1.04 (0.80, 1.34)	0.793	0.900
r-CaudACg	0.88 (0.69, 1.13)	0.329	0.559
r-RosACg	0.83 (0.61, 1.13)	0.233	0.457
r-Ins	1.10 (0.86, 1.41)	0.466	0.682
r-ParsOp	0.56 (0.43, 0.74)	<0.001	<0.001*
r-ParsTri	0.66 (0.50, 0.88)	0.004	0.028*
r-MedOrF	2.37 (1.62, 3.48)	<0.001	<0.001*
r-LOrF	2.94 (1.90, 4.56)	<0.001	<0.001*
r-ParsOr	1.02 (0.68, 1.52)	0.932	0.968
r-SupF	0.95 (0.76, 1.19)	0.640	0.810
r-Fpo	1.14 (0.64, 2.03)	0.645	0.814
r-RosMF	0.82 (0.63, 1.06)	0.134	0.327
r-CaudMF	0.53 (0.41, 0.69)	<0.001	<0.001*
r-PrC	0.79 (0.63, 1.00)	0.045	0.159

(B) LATE-SUBACUTE vs SUBACUTE

	LLLT vs. Sham		
Regions	**Odds Ratio, *OR* (95% CI)**	***p***	p_{fdr}
l-PrC	1.19 (0.95, 1.48)	0.125	0.312
l-CaudMF	0.82 (0.64, 1.05)	0.111	0.288
l-RosMF	0.68 (0.53, 0.88)	0.003	0.022*
l-Fpo	0.51 (0.25, 1.03)	0.060	0.190
l-SupF	0.75 (0.61, 0.93)	0.010	0.054
l-ParsOr	0.77 (0.52, 1.12)	0.168	0.375
l-LOrF	0.41 (0.28, 0.59)	<0.001	<0.001*
l-MedOrF	0.38 (0.25, 0.57)	<0.001	<0.001*
l-ParsTri	0.87 (0.66, 1.15)	0.330	0.560
l-ParsOp	0.92 (0.72, 1.17)	0.493	0.703
l-Ins	0.76 (0.60, 0.96)	0.019	0.087

l-RosACg	0.83 (0.62, 1.11)	0.210	0.428
l-CaudACg	0.84 (0.66, 1.06)	0.143	0.339
l-IsCg	1.66 (1.30, 2.12)	<0.001	0.001*
l-PosCg	1.03 (0.83, 1.28)	0.759	0.880
l-Tpo	0.40 (0.26, 0.62)	<0.001	0.001*
l-TrT	0.99 (0.77, 1.26)	0.909	0.957
l-SupT	0.82 (0.65, 1.03)	0.088	0.245
l-BPosSupT	0.89 (0.69, 1.17)	0.411	0.635
l-MT	0.95 (0.73, 1.24)	0.717	0.859
l-InfT	0.78 (0.56, 1.09)	0.141	0.336
l-EnRh	0.89 (0.58, 1.37)	0.598	0.782
l-PosC	0.90 (0.72, 1.14)	0.388	0.614
l-PrCun	0.99 (0.80, 1.23)	0.921	0.963
l-PaC	1.34 (1.08, 1.67)	0.009	0.052
l-SupP	1.01 (0.81, 1.27)	0.901	0.953
l-SuMar	0.88 (0.70, 1.09)	0.234	0.458
l-InfP	1.29 (1.03, 1.63)	0.027	0.112
l-LOc	0.68 (0.52, 0.88)	0.003	0.024*
l-PaHip	1.59 (1.10, 2.31)	0.013	0.069
l-Fu	0.86 (0.67, 1.11)	0.256	0.483
l-PerCc	0.67 (0.52, 0.87)	0.002	0.018*
l-Cun	0.89 (0.70, 1.14)	0.353	0.582
l-Lin	1.27 (1.00, 1.61)	0.053	0.176
l-Pu	0.96 (0.72, 1.29)	0.788	0.896
l-Pal	1.06 (0.65, 1.75)	0.806	0.907
l-CaN	0.55 (0.41, 0.72)	<0.001	0.001*
l-Amg	0.43 (0.27, 0.67)	<0.001	0.003*
l-Tha	1.02 (0.79, 1.32)	0.869	0.937
l-Hip	1.37 (1.01, 1.85)	0.044	0.156
l-NAcc	0.83 (0.48, 1.45)	0.519	0.725
r-NAcc	0.22 (0.11, 0.43)	<0.001	<0.001*
r-Hip	1.54 (1.14, 2.08)	0.005	0.035*
r-Tha	1.09 (0.84, 1.41)	0.506	0.714
r-Amg	1.21 (0.77, 1.89)	0.408	0.632
r-CaN	1.18 (0.88, 1.58)	0.263	0.490
r-Pal	2.63 (1.43, 4.83)	0.002	0.016*
r-Pu	1.35 (1.00, 1.83)	0.047	0.163
r-Lin	1.09 (0.86, 1.39)	0.473	0.687
r-Cun	1.22 (0.95, 1.55)	0.113	0.290
r-PerCc	0.93 (0.72, 1.20)	0.558	0.753
r-Fu	1.97 (1.53, 2.54)	<0.001	<0.001*
r-PaHip	2.45 (1.59, 3.78)	<0.001	0.001*
r-LOc	1.05 (0.81, 1.36)	0.726	0.864
r-InfP	1.53 (1.21, 1.94)	<0.001	0.005*
r-SuMar	1.07 (0.85, 1.35)	0.568	0.761
r-SupP	1.32 (1.05, 1.66)	0.016	0.079
r-PaC	1.33 (1.07, 1.66)	0.011	0.061
r-PrCun	1.20 (0.97, 1.49)	0.095	0.258
r-PosC	1.44 (1.14, 1.81)	0.002	0.019*
r-EnRh	1.07 (0.59, 1.92)	0.830	0.919
r-InfT	1.05 (0.76, 1.44)	0.777	0.890
r-MT	0.94 (0.72, 1.22)	0.617	0.795
r-BPosSupT	1.10 (0.82, 1.46)	0.537	0.737
r-SupT	1.17 (0.92, 1.50)	0.197	0.414
r-TrT	1.30 (0.98, 1.73)	0.070	0.210
r-Tpo	0.46 (0.21, 1.00)	0.051	0.172

r-PosCg	1.06 (0.86, 1.32)	0.573	0.764
r-IsCg	1.28 (1.00, 1.64)	0.052	0.173
r-CaudACg	1.01 (0.80, 1.29)	0.921	0.963
r-RosACg	0.81 (0.59, 1.11)	0.180	0.392
r-Ins	0.86 (0.67, 1.09)	0.207	0.425
r-ParsOp	0.74 (0.57, 0.96)	0.024	0.102
r-ParsTri	1.05 (0.80, 1.39)	0.716	0.859
r-MedOrF	0.69 (0.46, 1.04)	0.076	0.223
r-LOrF	1.35 (0.91, 2.01)	0.141	0.337
r-ParsOr	1.31 (0.87, 1.97)	0.189	0.405
r-SupF	0.75 (0.60, 0.93)	0.009	0.050*
r-Fpo	0.94 (0.53, 1.66)	0.832	0.920
r-RosMF	0.87 (0.67, 1.13)	0.287	0.518
r-CaudMF	1.08 (0.83, 1.40)	0.561	0.756
r-PrC	1.13 (0.90, 1.41)	0.297	0.528

1.3 Supplementary Note 3: List of brain region pairs showing significant differences in connectivity strength in the cross-sectional comparisons between patients and healthy controls, and those in the cross-sectional and temporal comparisons between sham- and LLLT-treated patients

For each subject, the time series of ΔBOLD were averaged in each brain region and pairwise Pearson correlations (*r*) were computed using the program '3dNetCorr'[6]. Fisher's z transformation was applied to each correlation coefficient to quantify connectivity strength between two brain regions for group analysis.

A linear mixed-effects regression model was constructed to quantify the association between regional connectivity strength (Fisher's z-transformed correlation coefficients), TBI recovery phase (acute, subacute, and late-subacute), treatment group (control, sham, and LLLT), and their interaction while accounting for data dependencies using a random-intercept model. The estimates of the differences in Fisher transformed *z* values (*zdiff*), their associated 95% CI, and uncorrected *p* were computed in the cross-sectional comparisons of connectivity strength by study group (LLLT vs. Control, Sham vs. Control, and LLLT vs. Sham) during the acute, subacute, and late-subacute phases. FDR adjusted p-values (p_{fdr}) were computed to account for multiple comparisons[4], and we defined significant differences in connectivity strength as those with a $p_{fdr}<0.05$. All analyses were again performed using R.4.0.0 (https://www.R-project.org). Only the brain region pairs showing significant differences ($p_{fdr}<0.05$) in the comparisons are shown in Supplementary Table 4. For example, in the comparison of sham-treated patients vs. controls at the connection between the left and the right superior frontal regions (l-SupF, r-SupF) during the acute phase, the estimate of the difference in Fisher transformed *z* values (*zdiff*) was 0.56 (95% CI=0.30 - 0.83, $p_{fdr}=0.013$) (Supplementary Table 4A), indicating that the connectivity strength in sham-treated patients was

greater than that in controls in this connection. The corresponding estimates of Pearson's correlation coefficient (r) in the study groups (Sham: r=0.91; Control: r=0.75) are also included for reference.

The *zdiff*, their associated 95% CI, uncorrected p, and p_{fdr} were also computed in the temporal comparisons of connectivity strength (Subacute vs. Acute, and Late-subacute vs. Subacute) by treatment group (Sham and LLLT) (Supplementary Table 5), and in the temporal comparisons of connectivity strength (Subacute vs. Acute, and Late-subacute vs. Subacute) between treatment groups (Sham vs. LLLT) (Supplementary Table 6). Only the brain region pairs showing significant differences (p_{fdr}<0.05) in the comparisons are shown.

Supplementary Table 4. Estimates of the differences in Fisher transformed *z* values (*zdiff*), 95% confidence interval, uncorrected p-values (*p*), and false discovery rate adjusted p-values (p_{fdr}) in the cross-sectional comparisons of connectivity strength by study group (LLLT vs. Control, Sham vs. Control, and LLLT vs. Sham) during the acute, subacute, and late-subacute phases. The corresponding estimates of Pearson's correlation coefficient (*r*) in the study groups are also included for reference. The connections in each comparison are arranged in descending order of the estimates with positive estimates followed by negative estimates.

(A) ACUTE PHASE

	Sham vs. Control			**Sham**	**Control**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-SupF, r-SupF	0.56 (0.30, 0.83)	2.67E-05	0.013	0.91 (0.87, 0.94)	0.75 (0.66, 0.81)
l-PosC, l-SuMar	0.50 (0.27, 0.72)	1.26E-05	0.010	0.82 (0.76, 0.87)	0.58 (0.48, 0.67)
r-PrC, r-SupF	0.49 (0.25, 0.72)	4.71E-05	0.018	0.79 (0.71, 0.85)	0.52 (0.41, 0.62)
r-PosC, r-PrC	0.45 (0.23, 0.67)	4.77E-05	0.018	0.93 (0.90, 0.95)	0.83 (0.78, 0.87)
r-PosC, r-SupF	0.44 (0.21, 0.66)	1.53E-04	0.037	0.70 (0.60, 0.78)	0.41 (0.28, 0.52)
l-PosC, l-PrC	0.43 (0.22, 0.65)	8.51E-05	0.025	0.93 (0.90, 0.95)	0.84 (0.79, 0.87)
r-CaudMF, r-PrC	0.43 (0.21, 0.65)	1.67E-04	0.038	0.73 (0.63, 0.80)	0.46 (0.34, 0.56)
l-CaudMF, l-PrC	0.42 (0.23, 0.62)	1.61E-05	0.011	0.75 (0.68, 0.81)	0.50 (0.41, 0.59)
r-CaudMF, r-PosC	0.41 (0.20, 0.62)	1.79E-04	0.039	0.60 (0.49, 0.70)	0.28 (0.15, 0.40)
l-PosC, l-SupF	0.37 (0.17, 0.56)	2.07E-04	0.042	0.70 (0.61, 0.77)	0.46 (0.36, 0.55)
l-ParsOp, l-RosMF	0.33 (0.16, 0.50)	1.50E-04	0.037	0.76 (0.70, 0.81)	0.59 (0.52, 0.65)
r-InfP, r-MedOrF	-0.31 (-0.48, -0.15)	2.26E-04	0.043	0.32 (0.21, 0.43)	0.57 (0.50, 0.64)
r-Fu, r-Tpo	-0.30 (-0.46, -0.14)	2.53E-04	0.047	0.34 (0.23, 0.44)	0.57 (0.50, 0.64)
l-EnRh, r-MT	-0.27 (-0.41, -0.13)	1.59E-04	0.037	0.21 (0.10, 0.31)	0.45 (0.38, 0.51)
l-EnRh, l-IsCg	-0.23 (-0.35, -0.11)	1.35E-04	0.035	0.29 (0.20, 0.38)	0.49 (0.43, 0.54)
	LLLT vs. Control			**LLLT**	**Control**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-SupF, r-SupF	0.67 (0.38, 0.96)	7.59E-06	0.008	0.93 (0.88, 0.95)	0.75 (0.66, 0.81)
r-CaudMF, r-RosMF	0.63 (0.40, 0.86)	8.81E-08	0.001	0.89 (0.84, 0.92)	0.66 (0.57, 0.73)
r-CaudMF, r-PosC	0.62 (0.38, 0.86)	5.18E-07	0.002	0.72 (0.61, 0.80)	0.28 (0.15, 0.40)
r-CaudMF, r-PrC	0.61 (0.36, 0.86)	2.24E-06	0.004	0.80 (0.71, 0.86)	0.46 (0.34, 0.56)
l-CaudMF, l-PrC	0.60 (0.38, 0.81)	6.77E-08	0.001	0.82 (0.75, 0.87)	0.50 (0.41, 0.59)
r-PosC, r-PrC	0.60 (0.36, 0.85)	1.01E-06	0.003	0.95 (0.92, 0.96)	0.83 (0.78, 0.87)
r-PosC, r-SupF	0.59 (0.34, 0.84)	4.74E-06	0.006	0.77 (0.67, 0.84)	0.41 (0.28, 0.52)
r-PrC, r-SupF	0.59 (0.32, 0.85)	1.54E-05	0.011	0.82 (0.74, 0.88)	0.52 (0.41, 0.62)
l-CaudMF, l-RosMF	0.57 (0.34, 0.79)	7.58E-07	0.003	0.85 (0.79, 0.90)	0.60 (0.52, 0.68)
r-CaudMF, r-SupF	0.56 (0.28, 0.83)	6.48E-05	0.022	0.88 (0.82, 0.92)	0.68 (0.59, 0.76)
l-PaC, r-SupF	0.55 (0.30, 0.80)	1.71E-05	0.012	0.79 (0.69, 0.85)	0.47 (0.36, 0.58)
l-CaudMF, r-SupF	0.54 (0.26, 0.82)	1.45E-04	0.036	0.80 (0.70, 0.87)	0.50 (0.37, 0.61)
l-PrC, r-SupF	0.54 (0.28, 0.81)	5.04E-05	0.019	0.79 (0.70, 0.86)	0.48 (0.36, 0.59)
r-PaC, r-SupF	0.54 (0.29, 0.80)	2.09E-05	0.012	0.80 (0.71, 0.86)	0.51 (0.39, 0.60)
r-PosC, r-RosMF	0.54 (0.32, 0.76)	1.77E-06	0.003	0.67 (0.56, 0.76)	0.27 (0.14, 0.38)
l-PrC, r-CaudMF	0.53 (0.27, 0.78)	5.67E-05	0.020	0.69 (0.57, 0.79)	0.32 (0.18, 0.44)
r-InfP, r-PosC	0.53 (0.29, 0.77)	1.37E-05	0.011	0.73 (0.62, 0.81)	0.38 (0.25, 0.49)
r-PrC, r-RosMF	0.52 (0.30, 0.73)	3.68E-06	0.005	0.75 (0.66, 0.81)	0.42 (0.31, 0.52)
l-PosC, r-SupF	0.51 (0.27, 0.75)	2.96E-05	0.014	0.72 (0.61, 0.80)	0.38 (0.26, 0.49)
l-SupP, r-SupP	0.51 (0.24, 0.79)	2.83E-04	0.050	0.94 (0.90, 0.96)	0.84 (0.78, 0.88)
l-PosC, l-SuMar	0.50 (0.26, 0.75)	5.78E-05	0.020	0.82 (0.75, 0.88)	0.58 (0.48, 0.67)
l-PrC, l-SupF	0.50 (0.27, 0.72)	1.80E-05	0.012	0.83 (0.76, 0.88)	0.59 (0.51, 0.67)
l-CaudMF, l-PosC	0.49 (0.28, 0.71)	9.02E-06	0.009	0.69 (0.58, 0.77)	0.33 (0.22, 0.44)
l-InfP, l-PosC	0.49 (0.27, 0.72)	2.19E-05	0.012	0.71 (0.61, 0.79)	0.38 (0.25, 0.48)
l-PaC, r-CaudMF	0.49 (0.26, 0.72)	3.01E-05	0.014	0.66 (0.54, 0.76)	0.30 (0.19, 0.41)

l-PosC, r-CaudMF	0.49 (0.26, 0.72)	2.69E-05	0.013	0.59 (0.46, 0.71)	0.19 (0.07, 0.31)
r-PosC, r-SuMar	0.49 (0.24, 0.75)	1.16E-04	0.032	0.87 (0.80, 0.91)	0.68 (0.59, 0.75)
l-CaudMF, r-RosMF	0.48 (0.22, 0.74)	2.86E-04	0.050	0.74 (0.62, 0.82)	0.43 (0.31, 0.54)
l-PosC, l-SupF	0.47 (0.25, 0.70)	2.60E-05	0.013	0.75 (0.65, 0.82)	0.46 (0.36, 0.55)
l-CaudMF, l-SupF	0.46 (0.22, 0.70)	2.12E-04	0.042	0.87 (0.81, 0.91)	0.70 (0.64, 0.76)
l-PrC, l-RosMF	0.46 (0.25, 0.67)	1.85E-05	0.012	0.75 (0.67, 0.82)	0.48 (0.39, 0.56)
r-CaudMF, r-PaC	0.46 (0.23, 0.70)	1.03E-04	0.029	0.69 (0.57, 0.78)	0.36 (0.24, 0.46)
r-CaudMF, r-SupP	0.46 (0.23, 0.69)	7.66E-05	0.024	0.71 (0.60, 0.79)	0.40 (0.30, 0.50)
r-CaudMF, r-SuMar	0.46 (0.23, 0.68)	6.34E-05	0.022	0.74 (0.65, 0.81)	0.46 (0.35, 0.55)
l-PaC, l-SupF	0.45 (0.22, 0.68)	1.23E-04	0.033	0.78 (0.69, 0.84)	0.53 (0.44, 0.62)
l-PosC, l-SupP	0.45 (0.21, 0.69)	2.79E-04	0.049	0.81 (0.73, 0.87)	0.59 (0.49, 0.67)
l-PosC, r-RosMF	0.45 (0.23, 0.67)	4.56E-05	0.018	0.59 (0.46, 0.69)	0.22 (0.10, 0.33)
r-InfP, r-PrC	0.45 (0.21, 0.68)	1.96E-04	0.041	0.74 (0.64, 0.82)	0.47 (0.36, 0.57)
l-SupF, r-PaC	0.44 (0.21, 0.67)	1.78E-04	0.039	0.77 (0.68, 0.84)	0.53 (0.43, 0.61)
l-PosC, l-PrCun	0.43 (0.20, 0.66)	2.46E-04	0.046	0.75 (0.66, 0.82)	0.50 (0.39, 0.59)
l-SupF, r-PosC	0.43 (0.20, 0.66)	2.71E-04	0.048	0.71 (0.61, 0.80)	0.43 (0.33, 0.53)
r-RosMF, r-SupF	0.43 (0.22, 0.64)	7.93E-05	0.025	0.86 (0.80, 0.90)	0.70 (0.63, 0.75)
l-PosC, l-RosMF	0.42 (0.21, 0.63)	1.11E-04	0.031	0.63 (0.52, 0.73)	0.32 (0.21, 0.42)
l-SupF, r-CaudACg	0.42 (0.20, 0.65)	2.13E-04	0.042	0.76 (0.67, 0.83)	0.52 (0.42, 0.61)
l-CaudMF, l-PaC	0.41 (0.20, 0.63)	1.57E-04	0.037	0.67 (0.56, 0.76)	0.38 (0.28, 0.47)
l-SupF, r-PosCg	0.41 (0.19, 0.62)	1.94E-04	0.041	0.79 (0.71, 0.85)	0.58 (0.49, 0.65)
l-Tpo, r-MT	-0.41 (-0.60, -0.22)	2.65E-05	0.013	0.09 (-0.08, 0.25)	0.46 (0.38, 0.54)
l-Tpo, r-LOc	-0.36 (-0.53, -0.18)	7.61E-05	0.024	-0.03 (-0.18, 0.11)	0.31 (0.22, 0.39)
l-NAcc, l-RosACg	-0.33 (-0.50, -0.15)	2.70E-04	0.048	0.28 (0.14, 0.41)	0.55 (0.48, 0.61)
r-Pal, l-EnRh	-0.29 (-0.43, -0.14)	8.54E-05	0.025	0.15 (0.03, 0.26)	0.41 (0.35, 0.47)
	LLLT vs. Sham			**LLLT**	**Sham**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
No significant difference was found.					
(B) SUBACUTE PHASE					
	Sham vs. Control			**Sham**	**Control**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-SupF, r-SupF	0.61 (0.35, 0.88)	5.04E-06	0.006	0.92 (0.88, 0.94)	0.75 (0.66, 0.81)
r-CaudMF, r-PrC	0.47 (0.25, 0.69)	3.30E-05	0.015	0.75 (0.66, 0.81)	0.46 (0.34, 0.56)
l-CaudMF, l-PrC	0.44 (0.25, 0.64)	6.89E-06	0.007	0.76 (0.69, 0.82)	0.50 (0.41, 0.59)
r-CaudMF, r-PosC	0.43 (0.22, 0.65)	7.56E-05	0.024	0.62 (0.51, 0.71)	0.28 (0.15, 0.40)
l-PosC, l-PrC	0.41 (0.20, 0.63)	1.88E-04	0.040	0.93 (0.90, 0.95)	0.84 (0.79, 0.87)
r-CaudMF, r-SupP	0.39 (0.19, 0.59)	1.50E-04	0.037	0.67 (0.58, 0.75)	0.40 (0.30, 0.50)
l-CaudMF, l-PosC	0.37 (0.17, 0.56)	1.98E-04	0.041	0.61 (0.51, 0.70)	0.33 (0.22, 0.44)
l-LOrF, r-ParsOr	-0.40 (-0.57, -0.24)	1.88E-06	0.003	0.29 (0.17, 0.40)	0.61 (0.54, 0.67)
l-LOrF, l-ParsTri	-0.34 (-0.51, -0.16)	1.74E-04	0.039	0.33 (0.20, 0.45)	0.59 (0.52, 0.66)
r-PosCg, r-Ins	-0.31 (-0.46, -0.16)	6.81E-05	0.022	0.60 (0.53, 0.67)	0.76 (0.72, 0.80)
l-InfT, l-ParsOr	-0.29 (-0.44, -0.15)	7.24E-05	0.024	0.42 (0.32, 0.51)	0.63 (0.57, 0.68)
l-Amg, r-BPosSupT	-0.28 (-0.42, -0.14)	9.29E-05	0.027	0.15 (0.04, 0.25)	0.40 (0.32, 0.47)
l-Amg, r-LOc	-0.27 (-0.41, -0.12)	2.22E-04	0.043	0.15 (0.04, 0.26)	0.39 (0.32, 0.47)
l-EnRh, l-IsCg	-0.25 (-0.37, -0.13)	4.89E-05	0.019	0.28 (0.18, 0.37)	0.49 (0.43, 0.54)
	LLLT vs. Control			**LLLT**	**Control**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-SupF, r-SupF	0.67 (0.39, 0.95)	2.88E-06	0.004	0.93 (0.89, 0.95)	0.75 (0.66, 0.81)
l-PosC, l-SuMar	0.60 (0.36, 0.83)	8.74E-07	0.003	0.85 (0.79, 0.90)	0.58 (0.48, 0.67)
l-PosC, l-PrC	0.59 (0.36, 0.82)	5.43E-07	0.002	0.95 (0.92, 0.96)	0.84 (0.79, 0.87)
l-CaudMF, l-PosC	0.55 (0.34, 0.76)	2.17E-07	0.001	0.71 (0.62, 0.79)	0.33 (0.22, 0.44)
l-CaudMF, l-PrC	0.54 (0.33, 0.74)	2.91E-07	0.002	0.80 (0.73, 0.85)	0.50 (0.41, 0.59)
l-CaudMF, l-PaC	0.51 (0.31, 0.71)	5.48E-07	0.002	0.72 (0.63, 0.79)	0.38 (0.28, 0.47)
l-InfP, l-PosC	0.50 (0.28, 0.72)	8.73E-06	0.009	0.71 (0.62, 0.79)	0.38 (0.25, 0.48)
l-PosC, l-SupF	0.49 (0.28, 0.70)	3.98E-06	0.006	0.75 (0.67, 0.82)	0.46 (0.36, 0.55)

l-CaudMF, r-PaC	0.46 (0.26, 0.66)	8.83E-06	0.009	0.69 (0.60, 0.77)	0.38 (0.27, 0.47)
r-PaC, r-SupF	0.46 (0.22, 0.69)	1.75E-04	0.039	0.77 (0.68, 0.83)	0.51 (0.39, 0.60)
l-PaC, r-SupF	0.45 (0.22, 0.69)	1.77E-04	0.039	0.75 (0.65, 0.82)	0.47 (0.36, 0.58)
l-PosC, r-SupF	0.45 (0.22, 0.67)	9.87E-05	0.028	0.69 (0.59, 0.78)	0.38 (0.26, 0.49)
l-PrC, l-SuMar	0.45 (0.21, 0.69)	2.15E-04	0.043	0.88 (0.84, 0.92)	0.74 (0.67, 0.80)
r-PosC, r-PrC	0.45 (0.22, 0.68)	1.50E-04	0.037	0.93 (0.90, 0.95)	0.83 (0.78, 0.87)
l-CaudMF, r-CaudACg	0.43 (0.22, 0.64)	5.08E-05	0.019	0.65 (0.54, 0.73)	0.32 (0.21, 0.43)
l-PosC, l-RosMF	0.42 (0.22, 0.62)	4.61E-05	0.018	0.63 (0.53, 0.72)	0.32 (0.21, 0.42)
l-RosACg, l-RosMF	0.42 (0.20, 0.63)	1.73E-04	0.039	0.69 (0.58, 0.77)	0.40 (0.28, 0.50)
l-PaC, l-SupF	0.40 (0.18, 0.62)	2.76E-04	0.049	0.76 (0.67, 0.82)	0.53 (0.44, 0.62)
l-PrC, l-SupF	0.40 (0.19, 0.61)	2.57E-04	0.047	0.79 (0.72, 0.85)	0.59 (0.51, 0.67)
l-SupF, r-PaC	0.40 (0.19, 0.62)	2.48E-04	0.046	0.76 (0.67, 0.82)	0.53 (0.43, 0.61)
l-CaudMF, l-PosCg	0.38 (0.20, 0.57)	4.95E-05	0.019	0.73 (0.65, 0.79)	0.50 (0.41, 0.58)
l-CaudMF, r-PosCg	0.38 (0.19, 0.58)	1.21E-04	0.033	0.69 (0.60, 0.76)	0.43 (0.33, 0.52)
l-ParsOp, l-RosMF	0.38 (0.20, 0.56)	4.20E-05	0.018	0.78 (0.72, 0.83)	0.59 (0.52, 0.65)
l-IsCg, l-PosC	0.37 (0.19, 0.56)	9.46E-05	0.027	0.64 (0.55, 0.72)	0.37 (0.28, 0.47)
l-PrC, l-RosMF	0.37 (0.17, 0.56)	2.59E-04	0.047	0.71 (0.62, 0.78)	0.48 (0.39, 0.56)
l-Cun, l-Lin	-0.41 (-0.61, -0.21)	4.52E-05	0.018	0.77 (0.69, 0.82)	0.89 (0.86, 0.91)
l-Lin, l-PerCc	-0.37 (-0.55, -0.19)	4.43E-05	0.018	0.84 (0.79, 0.88)	0.92 (0.90, 0.93)
r-Pu, r-Pal	-0.35 (-0.51, -0.18)	4.59E-05	0.018	0.60 (0.51, 0.68)	0.78 (0.74, 0.81)
r-Pal, r-InfT	-0.31 (-0.46, -0.17)	1.79E-05	0.012	0.25 (0.13, 0.35)	0.51 (0.45, 0.57)
l-InfT, l-ParsOr	-0.31 (-0.47, -0.16)	7.93E-05	0.025	0.40 (0.29, 0.50)	0.63 (0.57, 0.68)
r-EnRh, r-IsCg	-0.31 (-0.45, -0.18)	5.69E-06	0.006	0.21 (0.10, 0.31)	0.48 (0.42, 0.53)
r-Pal, r-EnRh	-0.30 (-0.44, -0.16)	2.16E-05	0.012	0.13 (0.02, 0.24)	0.41 (0.34, 0.48)
l-IsCg, r-EnRh	-0.28 (-0.41, -0.14)	7.96E-05	0.025	0.21 (0.10, 0.32)	0.46 (0.40, 0.52)
r-Amg, r-IsCg	-0.27 (-0.41, -0.12)	2.50E-04	0.046	0.22 (0.10, 0.32)	0.45 (0.38, 0.51)
r-Pal, l-EnRh	-0.26 (-0.39, -0.12)	1.54E-04	0.037	0.18 (0.07, 0.28)	0.41 (0.35, 0.47)
r-Pal, r-ParsOp	-0.26 (-0.39, -0.13)	5.24E-05	0.019	0.35 (0.25, 0.43)	0.55 (0.50, 0.60)
r-Amg, l-IsCg	-0.25 (-0.39, -0.12)	2.41E-04	0.046	0.22 (0.11, 0.32)	0.44 (0.38, 0.50)
	LLLT vs. Sham			**LLLT**	**Sham**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-Pu, r-SupP	0.37 (0.20, 0.54)	2.58E-05	0.013	0.55 (0.45, 0.63)	0.24 (0.13, 0.35)
l-Amg, r-LOc	0.32 (0.15, 0.48)	1.42E-04	0.036	0.44 (0.33, 0.53)	0.15 (0.04, 0.26)
(C) LATE-SUBACUTE PHASE					
	Sham vs. Control			**Sham**	**Control**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
r-CaudMF, r-PrC	0.74 (0.52, 0.96)	7.87E-11	0.000	0.84 (0.79, 0.89)	0.46 (0.34, 0.56)
l-SupF, r-SupF	0.68 (0.42, 0.95)	3.85E-07	0.002	0.93 (0.89, 0.95)	0.75 (0.66, 0.81)
r-CaudMF, r-PosC	0.62 (0.40, 0.83)	1.77E-08	0.000	0.72 (0.63, 0.79)	0.28 (0.15, 0.40)
l-CaudMF, l-PrC	0.61 (0.42, 0.81)	4.30E-10	0.000	0.82 (0.77, 0.87)	0.50 (0.41, 0.59)
l-CaudMF, r-SupF	0.51 (0.26, 0.76)	6.20E-05	0.021	0.79 (0.70, 0.85)	0.50 (0.37, 0.61)
r-CaudMF, r-SupP	0.50 (0.30, 0.70)	1.15E-06	0.003	0.73 (0.65, 0.79)	0.40 (0.30, 0.50)
l-CaudMF, l-SupF	0.47 (0.26, 0.68)	1.08E-05	0.010	0.87 (0.83, 0.91)	0.70 (0.64, 0.76)
r-PosC, r-PrC	0.47 (0.25, 0.69)	2.15E-05	0.012	0.93 (0.90, 0.95)	0.83 (0.78, 0.87)
l-CaudMF, l-PosC	0.46 (0.27, 0.66)	2.87E-06	0.004	0.67 (0.58, 0.74)	0.33 (0.22, 0.44)
r-CaudMF, r-PaC	0.46 (0.25, 0.66)	1.18E-05	0.010	0.68 (0.59, 0.76)	0.36 (0.24, 0.46)
r-PrC, r-SupF	0.45 (0.22, 0.69)	1.56E-04	0.037	0.78 (0.69, 0.84)	0.52 (0.41, 0.62)
l-PaC, r-CaudMF	0.44 (0.24, 0.64)	1.76E-05	0.012	0.63 (0.53, 0.72)	0.30 (0.19, 0.41)
l-PosC, l-SuMar	0.44 (0.22, 0.67)	9.12E-05	0.027	0.80 (0.74, 0.86)	0.58 (0.48, 0.67)
l-CaudMF, l-SupP	0.43 (0.23, 0.62)	1.72E-05	0.012	0.70 (0.61, 0.77)	0.41 (0.30, 0.50)
l-PosC, r-CaudMF	0.43 (0.23, 0.64)	2.63E-05	0.013	0.55 (0.43, 0.65)	0.19 (0.07, 0.31)
l-InfP, l-PosC	0.42 (0.21, 0.62)	6.95E-05	0.023	0.67 (0.58, 0.75)	0.38 (0.25, 0.48)
r-CaudMF, r-SuMar	0.42 (0.22, 0.62)	5.04E-05	0.019	0.72 (0.64, 0.79)	0.46 (0.35, 0.55)
l-SupP, r-CaudMF	0.41 (0.22, 0.59)	2.20E-05	0.012	0.66 (0.57, 0.74)	0.37 (0.27, 0.47)

l-PrC, l-SupF	0.39 (0.19, 0.59)	1.33E-04	0.035	0.79 (0.73, 0.84)	0.59 (0.51, 0.67)
l-CaudMF, l-RosMF	0.38 (0.18, 0.58)	1.70E-04	0.039	0.79 (0.73, 0.84)	0.60 (0.52, 0.68)
l-Cun, l-InfP	0.37 (0.19, 0.56)	1.01E-04	0.029	0.71 (0.64, 0.78)	0.48 (0.38, 0.57)
l-CaudMF, l-PaC	0.36 (0.17, 0.55)	1.55E-04	0.037	0.64 (0.55, 0.72)	0.38 (0.28, 0.47)
l-CaN, l-ParsTri	0.35 (0.19, 0.52)	2.15E-05	0.012	0.66 (0.59, 0.73)	0.42 (0.33, 0.50)
l-ParsOp, l-RosMF	0.35 (0.18, 0.52)	5.23E-05	0.019	0.77 (0.71, 0.82)	0.59 (0.52, 0.65)
l-CaN, l-RosMF	0.33 (0.16, 0.51)	1.42E-04	0.036	0.69 (0.61, 0.75)	0.47 (0.38, 0.55)
r-CaN, l-ParsTri	0.33 (0.17, 0.50)	7.36E-05	0.024	0.57 (0.48, 0.65)	0.30 (0.20, 0.39)
l-Cun, r-InfP	0.32 (0.15, 0.50)	2.66E-04	0.048	0.68 (0.60, 0.74)	0.46 (0.37, 0.55)
r-NAcc, l-Fpo	0.29 (0.16, 0.42)	1.71E-05	0.012	0.42 (0.32, 0.50)	0.15 (0.08, 0.23)
r-InfP, r-MedOrF	-0.32 (-0.48, -0.15)	2.06E-04	0.042	0.32 (0.20, 0.43)	0.57 (0.50, 0.64)
l-EnRh, l-IsCg	-0.23 (-0.35, -0.11)	1.32E-04	0.035	0.29 (0.20, 0.38)	0.49 (0.43, 0.54)
	LLLT vs. Control			**LLLT**	**Control**
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-SupF, r-SupF	0.65 (0.36, 0.93)	1.02E-05	0.009	0.92 (0.88, 0.95)	0.75 (0.66, 0.81)
r-PosC, r-PrC	0.60 (0.36, 0.84)	6.70E-07	0.002	0.95 (0.92, 0.96)	0.83 (0.78, 0.87)
l-PosC, l-SuMar	0.59 (0.35, 0.83)	1.39E-06	0.003	0.85 (0.79, 0.90)	0.58 (0.48, 0.67)
r-PosC, r-SupF	0.58 (0.34, 0.83)	3.50E-06	0.005	0.77 (0.67, 0.84)	0.41 (0.28, 0.52)
r-PrC, r-SupF	0.57 (0.31, 0.83)	1.47E-05	0.011	0.82 (0.73, 0.88)	0.52 (0.41, 0.62)
l-SupP, r-SupP	0.56 (0.29, 0.84)	4.68E-05	0.018	0.94 (0.91, 0.96)	0.84 (0.78, 0.88)
l-SupF, r-PosC	0.54 (0.32, 0.77)	1.87E-06	0.003	0.77 (0.68, 0.83)	0.43 (0.33, 0.53)
r-CaudMF, r-PosC	0.54 (0.31, 0.78)	5.56E-06	0.006	0.68 (0.57, 0.77)	0.28 (0.15, 0.40)
l-PosC, l-PrC	0.53 (0.29, 0.77)	1.16E-05	0.010	0.94 (0.91, 0.96)	0.84 (0.79, 0.87)
l-PosC, l-SupF	0.53 (0.31, 0.74)	1.39E-06	0.003	0.77 (0.69, 0.83)	0.46 (0.36, 0.55)
l-SupF, r-PrC	0.53 (0.28, 0.78)	2.64E-05	0.013	0.79 (0.71, 0.86)	0.50 (0.39, 0.60)
l-CaudMF, l-PosC	0.52 (0.31, 0.73)	1.59E-06	0.003	0.70 (0.60, 0.78)	0.33 (0.22, 0.44)
l-CaudMF, l-PrC	0.51 (0.30, 0.72)	1.92E-06	0.003	0.79 (0.71, 0.84)	0.50 (0.41, 0.59)
l-PaC, r-SupF	0.51 (0.27, 0.75)	3.50E-05	0.016	0.77 (0.68, 0.84)	0.47 (0.36, 0.58)
r-CaudMF, r-PrC	0.51 (0.27, 0.76)	3.66E-05	0.016	0.77 (0.67, 0.84)	0.46 (0.34, 0.56)
l-CaudMF, l-SupP	0.50 (0.29, 0.71)	4.66E-06	0.006	0.73 (0.64, 0.80)	0.41 (0.30, 0.50)
l-PrC, l-SupF	0.50 (0.28, 0.72)	9.19E-06	0.009	0.83 (0.76, 0.88)	0.59 (0.51, 0.67)
l-PosC, r-SupF	0.49 (0.25, 0.72)	3.85E-05	0.017	0.71 (0.61, 0.79)	0.38 (0.26, 0.49)
l-PrC, r-SupF	0.49 (0.24, 0.75)	1.67E-04	0.038	0.77 (0.67, 0.84)	0.48 (0.36, 0.59)
r-PaC, r-SupF	0.49 (0.25, 0.73)	8.31E-05	0.025	0.78 (0.69, 0.85)	0.51 (0.39, 0.60)
l-CaudMF, r-PosC	0.48 (0.26, 0.70)	2.00E-05	0.012	0.65 (0.54, 0.74)	0.29 (0.17, 0.40)
l-PaC, r-CaudMF	0.48 (0.26, 0.70)	2.14E-05	0.012	0.66 (0.54, 0.75)	0.30 (0.19, 0.41)
r-PosC, r-RosMF	0.48 (0.26, 0.70)	1.37E-05	0.011	0.64 (0.52, 0.73)	0.27 (0.14, 0.38)
l-CaudMF, l-PaC	0.47 (0.27, 0.68)	7.13E-06	0.007	0.70 (0.61, 0.78)	0.38 (0.28, 0.47)
l-CaudMF, r-SupP	0.47 (0.26, 0.68)	1.19E-05	0.010	0.68 (0.57, 0.76)	0.34 (0.23, 0.44)
l-PaC, l-SupF	0.47 (0.25, 0.69)	3.37E-05	0.015	0.79 (0.71, 0.85)	0.53 (0.44, 0.62)
l-CaudMF, r-PrC	0.46 (0.23, 0.70)	1.12E-04	0.031	0.69 (0.58, 0.78)	0.37 (0.24, 0.48)
l-SupF, r-PaC	0.46 (0.24, 0.68)	5.32E-05	0.019	0.78 (0.70, 0.84)	0.53 (0.43, 0.61)
l-CaudMF, r-PaC	0.45 (0.24, 0.66)	2.61E-05	0.013	0.69 (0.58, 0.77)	0.38 (0.27, 0.47)
l-InfP, l-PosC	0.45 (0.22, 0.67)	8.45E-05	0.025	0.69 (0.58, 0.77)	0.38 (0.25, 0.48)
l-PosC, r-CaudMF	0.45 (0.22, 0.67)	8.86E-05	0.026	0.56 (0.42, 0.68)	0.19 (0.07, 0.31)
r-CaudMF, r-SupP	0.44 (0.22, 0.66)	8.30E-05	0.025	0.70 (0.60, 0.78)	0.40 (0.30, 0.50)
l-SupF, r-SupP	0.43 (0.23, 0.63)	2.09E-05	0.012	0.71 (0.62, 0.78)	0.43 (0.34, 0.51)
r-CaudMF, r-PaC	0.43 (0.20, 0.66)	1.98E-04	0.041	0.67 (0.55, 0.76)	0.36 (0.24, 0.46)
r-SupF, r-SupP	0.42 (0.20, 0.64)	1.55E-04	0.037	0.72 (0.63, 0.80)	0.45 (0.35, 0.55)
l-SupF, r-SuMar	0.41 (0.19, 0.64)	2.58E-04	0.047	0.70 (0.59, 0.78)	0.42 (0.31, 0.52)
r-PrC, r-RosMF	0.41 (0.20, 0.62)	1.62E-04	0.037	0.70 (0.60, 0.77)	0.42 (0.31, 0.52)
l-SupP, r-CaudMF	0.40 (0.19, 0.61)	1.76E-04	0.039	0.66 (0.55, 0.75)	0.37 (0.27, 0.47)
r-ParsTri, r-PosC	0.40 (0.19, 0.62)	2.26E-04	0.043	0.65 (0.54, 0.74)	0.36 (0.25, 0.46)
r-BPosSupT, r-CaudMF	0.38 (0.18, 0.57)	1.24E-04	0.033	0.61 (0.50, 0.70)	0.32 (0.22, 0.41)
r-IsCg, r-PosC	0.35 (0.16, 0.53)	2.55E-04	0.047	0.61 (0.51, 0.70)	0.35 (0.26, 0.44)

	LLLT vs. Sham			LLLT	Sham
Connections	**Estimate, *zdiff***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-Pu, r-SupP	0.36 (0.18, 0.54)	6.52E-05	0.022	0.56 (0.46, 0.65)	0.27 (0.16, 0.37)

Supplementary Table 5. Estimates of the differences in Fisher transformed *z* values (*zdiff*), 95% confidence interval, uncorrected p-values (*p*), and false discovery rate adjusted p-values (p_{fdr}) in the temporal comparisons of connectivity strength (Subacute vs. Acute, and Late-subacute vs. Subacute) by treatment group (Sham and LLLT). The corresponding estimates of Pearson's correlation coefficient (*r*) in TBI phases are also included for reference. The connections in each comparison are arranged in descending order of the estimates with positive estimates followed by negative estimates.

(A) SUBACUTE vs. ACUTE

	Sham			**Subacute**	**Acute**
Connections	**Estimate, *z***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-LOrF, r-Ins	-0.27 (-0.40, -0.15)	2.30E-05	0.012	0.28 (0.15, 0.40)	0.51 (0.40, 0.60)
l-Tpo, r-Tpo	-0.25 (-0.39, -0.12)	1.93E-04	0.041	0.34 (0.19, 0.47)	0.54 (0.42, 0.64)
l-MT, r-ParsOr	-0.24 (-0.37, -0.11)	2.26E-04	0.043	0.26 (0.14, 0.38)	0.47 (0.36, 0.57)
l-Pu, r-ParsOr	-0.23 (-0.35, -0.11)	1.22E-04	0.033	0.20 (0.09, 0.30)	0.40 (0.31, 0.49)
l-BPosSupT, l-Fpo	-0.23 (-0.35, -0.12)	6.74E-05	0.022	0.09 (-0.03, 0.21)	0.31 (0.20, 0.41)
l-IsCg, r-ParsOr	-0.23 (-0.35, -0.11)	8.98E-05	0.026	0.18 (0.07, 0.29)	0.39 (0.29, 0.48)
l-CaN, r-LOrF	-0.20 (-0.31, -0.09)	2.70E-04	0.048	0.25 (0.14, 0.35)	0.43 (0.33, 0.52)
	LLLT			**Subacute**	**Acute**
Connections	**Estimate, *z***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-Tpo, r-LOc	0.39 (0.24, 0.53)	2.13E-07	0.001	0.34 (0.22, 0.45)	-0.03 (-0.18, 0.11)
l-Tpo, r-SupP	0.38 (0.21, 0.54)	6.75E-06	0.007	0.45 (0.33, 0.55)	0.10 (-0.06, 0.25)
l-LOc, l-Tpo	0.36 (0.20, 0.51)	5.72E-06	0.006	0.37 (0.24, 0.48)	0.03 (-0.13, 0.18)
l-Tpo, r-MT	0.36 (0.19, 0.53)	3.18E-05	0.015	0.42 (0.29, 0.53)	0.09 (-0.08, 0.25)
l-LOc, l-RosMF	0.33 (0.16, 0.51)	1.43E-04	0.036	0.57 (0.46, 0.66)	0.30 (0.15, 0.44)
l-Tpo, r-BPosSupT	0.31 (0.19, 0.44)	8.68E-07	0.003	0.26 (0.13, 0.37)	-0.05 (-0.18, 0.09)
l-Tpo, r-InfP	0.31 (0.18, 0.45)	6.40E-06	0.007	0.36 (0.25, 0.46)	0.06 (-0.07, 0.19)
l-Tpo, r-PerCc	0.31 (0.17, 0.45)	1.61E-05	0.011	0.32 (0.21, 0.43)	0.03 (-0.11, 0.16)
l-CaN, l-LOc	0.30 (0.14, 0.45)	2.15E-04	0.043	0.54 (0.43, 0.64)	0.30 (0.15, 0.45)
r-Pu, r-LOc	0.30 (0.17, 0.42)	5.15E-06	0.006	0.53 (0.43, 0.61)	0.29 (0.16, 0.41)
l-Lin, l-Tpo	0.30 (0.16, 0.44)	4.55E-05	0.018	0.29 (0.16, 0.41)	0.00 (-0.15, 0.14)
l-Tpo, r-Cun	0.30 (0.17, 0.44)	1.10E-05	0.010	0.36 (0.24, 0.46)	0.07 (-0.07, 0.21)
r-Pu, l-LOc	0.29 (0.15, 0.42)	1.93E-05	0.012	0.51 (0.40, 0.60)	0.27 (0.13, 0.39)
l-Cun, l-Tpo	0.28 (0.15, 0.42)	4.72E-05	0.018	0.34 (0.22, 0.45)	0.07 (-0.07, 0.21)
l-Tpo, r-Lin	0.28 (0.15, 0.41)	2.05E-05	0.012	0.31 (0.19, 0.42)	0.04 (-0.10, 0.18)
l-Tpo, r-PrCun	0.28 (0.15, 0.41)	3.63E-05	0.016	0.41 (0.30, 0.50)	0.15 (0.01, 0.28)
l-PrCun, l-Tpo	0.27 (0.13, 0.41)	2.07E-04	0.042	0.42 (0.31, 0.52)	0.18 (0.04, 0.31)
l-LOc, r-Tpo	0.26 (0.12, 0.39)	1.66E-04	0.038	0.30 (0.15, 0.43)	0.05 (-0.11, 0.21)
l-Fu, l-Fpo	0.24 (0.11, 0.37)	2.53E-04	0.047	0.34 (0.23, 0.44)	0.12 (-0.02, 0.24)
l-PerCc, r-Tpo	0.21 (0.10, 0.33)	2.21E-04	0.043	0.27 (0.14, 0.39)	0.06 (-0.08, 0.20)
l-Cun, r-Tpo	0.20 (0.10, 0.31)	1.90E-04	0.040	0.24 (0.10, 0.37)	0.05 (-0.10, 0.20)
r-CaudMF, r-RosMF	-0.40 (-0.57, -0.24)	1.35E-06	0.003	0.77 (0.69, 0.83)	0.89 (0.84, 0.92)
l-Cun, l-Lin	-0.32 (-0.47, -0.17)	2.17E-05	0.012	0.77 (0.69, 0.82)	0.87 (0.82, 0.91)
r-PrC, r-RosMF	-0.29 (-0.43, -0.15)	6.68E-05	0.022	0.59 (0.47, 0.69)	0.75 (0.66, 0.81)
r-ParsTri, r-SuMar	-0.28 (-0.41, -0.14)	6.55E-05	0.022	0.59 (0.47, 0.69)	0.74 (0.65, 0.81)
r-CaudMF, r-ParsTri	-0.27 (-0.41, -0.12)	2.44E-04	0.046	0.57 (0.45, 0.66)	0.72 (0.63, 0.79)
l-Pu, r-Tha	-0.24 (-0.36, -0.12)	1.38E-04	0.036	0.55 (0.46, 0.63)	0.70 (0.62, 0.76)
r-Tha, r-ParsOp	-0.21 (-0.31, -0.11)	5.89E-05	0.021	0.51 (0.41, 0.59)	0.65 (0.56, 0.72)
r-Tha, r-ParsTri	-0.21 (-0.32, -0.10)	1.84E-04	0.040	0.45 (0.35, 0.54)	0.60 (0.51, 0.68)

(B) LATE-SUBACUTE vs. SUBACUTE

	Sham			**Late-subacute**	**Subacute**
Connections	**Estimate, *z***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-Fpo, r-BPosSupT	0.26 (0.14, 0.39)	2.85E-05	0.014	0.29 (0.18, 0.39)	0.03 (-0.08, 0.14)
r-ParsOp, r-Fpo	0.26 (0.14, 0.39)	4.13E-05	0.018	0.34 (0.23, 0.44)	0.09 (-0.03, 0.20)

l-SupT, r-ParsOr	0.25 (0.12, 0.37)	1.42E-04	0.036	0.45 (0.34, 0.55)	0.23 (0.10, 0.35)
l-Cun, l-Fpo	0.24 (0.13, 0.36)	4.12E-05	0.018	0.29 (0.19, 0.38)	0.05 (-0.05, 0.16)
l-PerCc, l-Fpo	0.24 (0.12, 0.36)	7.89E-05	0.025	0.26 (0.16, 0.36)	0.02 (-0.09, 0.13)
l-Fpo, r-SupP	0.24 (0.12, 0.35)	9.87E-05	0.028	0.32 (0.22, 0.42)	0.10 (-0.01, 0.21)
l-CaN, l-SupT	0.22 (0.10, 0.33)	2.20E-04	0.043	0.59 (0.50, 0.67)	0.43 (0.32, 0.53)
l-Pal, r-ParsOp	0.22 (0.10, 0.33)	1.94E-04	0.041	0.45 (0.35, 0.54)	0.26 (0.15, 0.37)
l-BPosSupT, l-Fpo	0.22 (0.10, 0.33)	2.10E-04	0.042	0.30 (0.19, 0.40)	0.09 (-0.03, 0.21)
l-Pal, r-Pu	0.21 (0.10, 0.32)	1.77E-04	0.039	0.59 (0.50, 0.67)	0.44 (0.33, 0.54)
l-Pal, r-Ins	0.21 (0.11, 0.30)	3.81E-05	0.017	0.47 (0.38, 0.56)	0.30 (0.19, 0.40)
l-Lin, r-ParsOr	0.21 (0.10, 0.32)	1.11E-04	0.031	0.34 (0.24, 0.43)	0.14 (0.03, 0.25)
l-PaHip, r-Tpo	0.21 (0.11, 0.32)	8.31E-05	0.025	0.38 (0.27, 0.47)	0.18 (0.07, 0.29)
r-Fpo, r-TrT	0.21 (0.11, 0.31)	2.20E-05	0.012	0.29 (0.19, 0.39)	0.09 (-0.02, 0.19)
l-PaHip, r-RosMF	0.20 (0.10, 0.31)	1.57E-04	0.037	0.45 (0.34, 0.54)	0.27 (0.15, 0.38)
r-BPosSupT, r-Cun	0.20 (0.09, 0.30)	2.50E-04	0.046	0.62 (0.54, 0.70)	0.49 (0.39, 0.58)
l-Pal, r-Tha	0.19 (0.09, 0.29)	1.97E-04	0.041	0.57 (0.48, 0.65)	0.43 (0.33, 0.53)
l-Pal, r-PosCg	0.19 (0.09, 0.28)	1.56E-04	0.037	0.52 (0.43, 0.60)	0.37 (0.27, 0.46)
r-Pal, l-PerCc	0.19 (0.09, 0.28)	1.23E-04	0.033	0.39 (0.30, 0.47)	0.22 (0.12, 0.32)
l-Fu, r-PosCg	0.19 (0.09, 0.29)	2.72E-04	0.048	0.68 (0.60, 0.74)	0.56 (0.47, 0.65)
r-Pal, l-Cun	0.18 (0.09, 0.26)	3.02E-05	0.014	0.36 (0.28, 0.44)	0.20 (0.11, 0.29)
l-Pal, r-TrT	0.17 (0.09, 0.25)	2.40E-05	0.013	0.38 (0.29, 0.47)	0.23 (0.13, 0.33)
r-Pal, r-Cun	0.17 (0.09, 0.25)	5.68E-05	0.020	0.38 (0.30, 0.46)	0.23 (0.13, 0.32)
Connections	**LLLT Estimate, *z***	***p***	***p*$_{fdr}$**	**Late-subacute Estimate, *r***	**Subacute Estimate, *r***
r-ParsTri, r-SuMar	0.31 (0.19, 0.44)	1.66E-06	0.003	0.76 (0.68, 0.82)	0.59 (0.47, 0.69)
r-Amg, l-IsCg	0.30 (0.19, 0.40)	4.11E-08	0.001	0.48 (0.38, 0.56)	0.22 (0.11, 0.32)
r-Amg, l-PaC	0.30 (0.17, 0.43)	1.11E-05	0.010	0.47 (0.35, 0.57)	0.21 (0.08, 0.33)
r-Amg, r-IsCg	0.28 (0.16, 0.39)	2.97E-06	0.004	0.46 (0.36, 0.55)	0.22 (0.10, 0.32)
l-PosCg, r-ParsTri	0.28 (0.14, 0.41)	5.47E-05	0.020	0.60 (0.49, 0.68)	0.39 (0.26, 0.50)
r-Fu, r-Lin	0.27 (0.13, 0.41)	1.79E-04	0.039	0.74 (0.66, 0.81)	0.60 (0.48, 0.70)
r-LOrF, r-Fpo	0.27 (0.13, 0.42)	2.09E-04	0.042	0.52 (0.40, 0.62)	0.29 (0.15, 0.41)
r-Amg, r-LOrF	0.26 (0.14, 0.37)	1.24E-05	0.010	0.48 (0.37, 0.58)	0.26 (0.14, 0.38)
r-Amg, r-PaC	0.26 (0.13, 0.39)	9.58E-05	0.028	0.46 (0.35, 0.56)	0.24 (0.11, 0.35)
r-CaudMF, r-InfT	0.26 (0.12, 0.41)	2.23E-04	0.043	0.58 (0.47, 0.68)	0.38 (0.24, 0.51)
r-Amg, r-PrCun	0.25 (0.13, 0.38)	4.99E-05	0.019	0.49 (0.39, 0.58)	0.28 (0.17, 0.38)
r-ParsTri, r-TrT	0.25 (0.12, 0.38)	1.49E-04	0.037	0.65 (0.56, 0.73)	0.49 (0.37, 0.59)
l-CaN, r-Tha	0.24 (0.11, 0.36)	2.12E-04	0.042	0.76 (0.69, 0.82)	0.65 (0.55, 0.72)
r-Hip, l-IsCg	0.24 (0.11, 0.37)	2.08E-04	0.042	0.66 (0.59, 0.72)	0.50 (0.41, 0.58)
r-Hip, r-IsCg	0.24 (0.11, 0.37)	2.42E-04	0.046	0.67 (0.60, 0.73)	0.52 (0.43, 0.60)
r-Amg, l-PosCg	0.24 (0.11, 0.37)	1.88E-04	0.040	0.45 (0.34, 0.56)	0.24 (0.11, 0.36)
l-EnRh, r-TrT	0.24 (0.12, 0.35)	4.35E-05	0.018	0.41 (0.30, 0.50)	0.19 (0.08, 0.30)
l-IsCg, r-Fu	0.24 (0.12, 0.37)	1.11E-04	0.031	0.67 (0.58, 0.75)	0.52 (0.41, 0.62)
l-IsCg, r-SupT	0.24 (0.11, 0.37)	2.85E-04	0.050	0.56 (0.45, 0.66)	0.38 (0.25, 0.49)
r-Amg, l-PrCun	0.22 (0.11, 0.34)	2.17E-04	0.043	0.47 (0.36, 0.56)	0.27 (0.16, 0.38)
r-NAcc, r-PrC	0.21 (0.10, 0.31)	1.56E-04	0.037	0.35 (0.26, 0.44)	0.16 (0.06, 0.26)
l-Fpo, l-Tpo	-0.33 (-0.48, -0.18)	1.96E-05	0.012	0.16 (0.02, 0.29)	0.45 (0.34, 0.55)

Supplementary Table 6. Estimates of the differences in Fisher transformed *z* values (*zdiff*), 95% confidence interval, uncorrected p-values (*p*), and false discovery rate adjusted p-values (p_{fdr}) in the temporal comparisons of connectivity strength (Subacute vs. Acute, and Late-subacute vs. Subacute) between treatment groups (Sham vs. LLLT). The corresponding estimates of the differences in Pearson's correlation coefficient (*rdiff*) in treatment groups were also included for reference. The connections in each comparison are arranged in descending order of the estimates with positive estimates followed by negative estimates.

(A) SUBACUTE vs ACUTE					
	LLLT vs. Sham			**LLLT**	**SHAM**
Connections	**Estimate, *z***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
l-Fpo, r-LOc	0.45 (0.24, 0.67)	3.35E-05	0.015	0.26 (0.10, 0.41)	-0.18 (-0.31, -0.05)
l-LOc, l-Fpo	0.43 (0.24, 0.63)	1.54E-05	0.011	0.25 (0.11, 0.39)	-0.17 (-0.29, -0.05)
l-SupF, l-SupT	0.43 (0.21, 0.65)	1.21E-04	0.033	0.24 (0.07, 0.39)	-0.19 (-0.32, -0.05)
l-BPosSupT, l-Fpo	0.42 (0.24, 0.60)	4.96E-06	0.006	0.19 (0.05, 0.32)	-0.23 (-0.33, -0.12)
l-SupT, l-Fpo	0.40 (0.19, 0.60)	1.53E-04	0.037	0.21 (0.05, 0.35)	-0.19 (-0.31, -0.06)
l-Tpo, r-BPosSupT	0.39 (0.23, 0.55)	2.48E-06	0.004	0.30 (0.19, 0.41)	-0.07 (-0.17, 0.03)
l-Tpo, r-LOc	0.39 (0.20, 0.58)	4.72E-05	0.018	0.37 (0.24, 0.49)	-0.01 (-0.12, 0.11)
l-Fu, l-Fpo	0.37 (0.20, 0.53)	1.50E-05	0.011	0.24 (0.11, 0.35)	-0.13 (-0.23, -0.02)
l-Fpo, r-BPosSupT	0.37 (0.18, 0.57)	1.62E-04	0.037	0.17 (0.02, 0.31)	-0.20 (-0.32, -0.08)
l-LOc, r-Fpo	0.34 (0.16, 0.52)	2.73E-04	0.048	0.25 (0.11, 0.38)	-0.08 (-0.19, 0.03)
l-Fpo, r-ParsOr	0.34 (0.16, 0.52)	1.86E-04	0.040	0.17 (0.03, 0.30)	-0.18 (-0.28, -0.06)
l-Tpo, r-InfP	0.33 (0.15, 0.51)	2.55E-04	0.047	0.30 (0.18, 0.42)	-0.02 (-0.13, 0.10)
r-Pu, l-Tpo	0.32 (0.15, 0.50)	2.89E-04	0.050	0.21 (0.07, 0.33)	-0.11 (-0.22, 0.00)
l-Tpo, r-ParsOr	0.31 (0.15, 0.47)	1.76E-04	0.039	0.16 (0.04, 0.28)	-0.15 (-0.24, -0.05)
l-TrT, r-LOrF	0.30 (0.14, 0.46)	2.69E-04	0.048	0.15 (0.03, 0.27)	-0.15 (-0.25, -0.05)
(B) LATE-SUBACUTE vs SUBACUTE					
	LLLT vs. Sham			**LLLT**	**SHAM**
Connections	**Estimate, *z***	***p***	p_{fdr}	**Estimate, *r***	**Estimate, *r***
r-Amg, r-PosC	0.31 (0.14, 0.47)	2.49E-04	0.0464	0.21 (0.09, 0.32)	-0.10 (-0.20, 0.01)
l-CaN, l-SupT	-0.34 (-0.52, -0.17)	1.38E-04	0.0357	-0.13 (-0.25, 0.01)	0.21 (0.10, 0.32)

1.4 Supplementary Note 4: Comparison of resting-state connectivity between LLLT-treated patients and healthy controls during the acute, subacute and late-subacute phases

Given the heterogeneity of TBI, we included the cross-sectional comparisons of resting-state connectivity between LLLT-treated patients and the healthy controls during the acute, subacute and late-subacute phases, to facilitate the interpretation of the findings.

In the cross-sectional comparisons between the LLLT-treated patients and healthy controls, an association between nodal centrality and the co-existence of moderate TBI and LLLT was consistently observed at 9 brain regions during all the TBI recovery phases (acute, subacute, and late-subacute phases) (Figures 3D-3F; underlined in the columns under 'LLLT vs. Control' in Supplementary Table 1). Seven out of these 9 regions showing significantly greater nodal centrality in the LLLT-treated patients than the healthy controls were mostly in the anterior brain within the DMN, FPN, and SMN (left caudal middle frontal, left rostral middle frontal, left superior frontal, left postcentral, right postcentral, right superior frontal, and right caudal middle frontal) (p_{fdr}<0.05). Most of these brain regions overlapped with those showing significant differences in the cross-sectional comparisons of nodal centrality between the sham-treated patients and the healthy controls (Figures 3A-3C).

The characteristic 'M-shaped' connectivity profiles similar to those observed in the cross-sectional comparisons between the sham-treated patients and the healthy controls (Figures 3A-3C) were observed in the cross-sectional comparisons between the LLLT-treated patients and the healthy controls (Figures 3D-3F). The connectivity profile in the comparison of LLLT-treated patients vs. healthy controls was enhanced by more intrahemispheric and interhemispheric connections between the frontal and parietal brain regions within the DMN, FPN, VAN, DAN, and SMN (Figures 3D-3F) compared with the sham-treated patients vs. healthy controls (Figures 3A-3C). Connectivity strength

was significantly greater in the LLLT-treated patients than in the healthy controls at 46 connections during the acute phase, 25 connections during the subacute phase, and 41 connections during the late-subacute phase (Table 4A). The interhemispheric connection between bilateral superior parietal regions (l-SupP, r-SupP) forms a direct 'bridge' between the two parietal lobes during the acute (p_{fdr}=0.050; Figure 3D) and late-subacute phases (p_{fdr}=0.018; Figure 3F). In addition, the brain regions within the frontal and parietal lobes were inter-connected via intralobar connections (Figures 3D-3F). Limbic regions were connected with this profile via the connections with brain regions in the frontal lobes during the acute and subacute phases, and with brain region in the parietal lobe during the late-subacute phase.

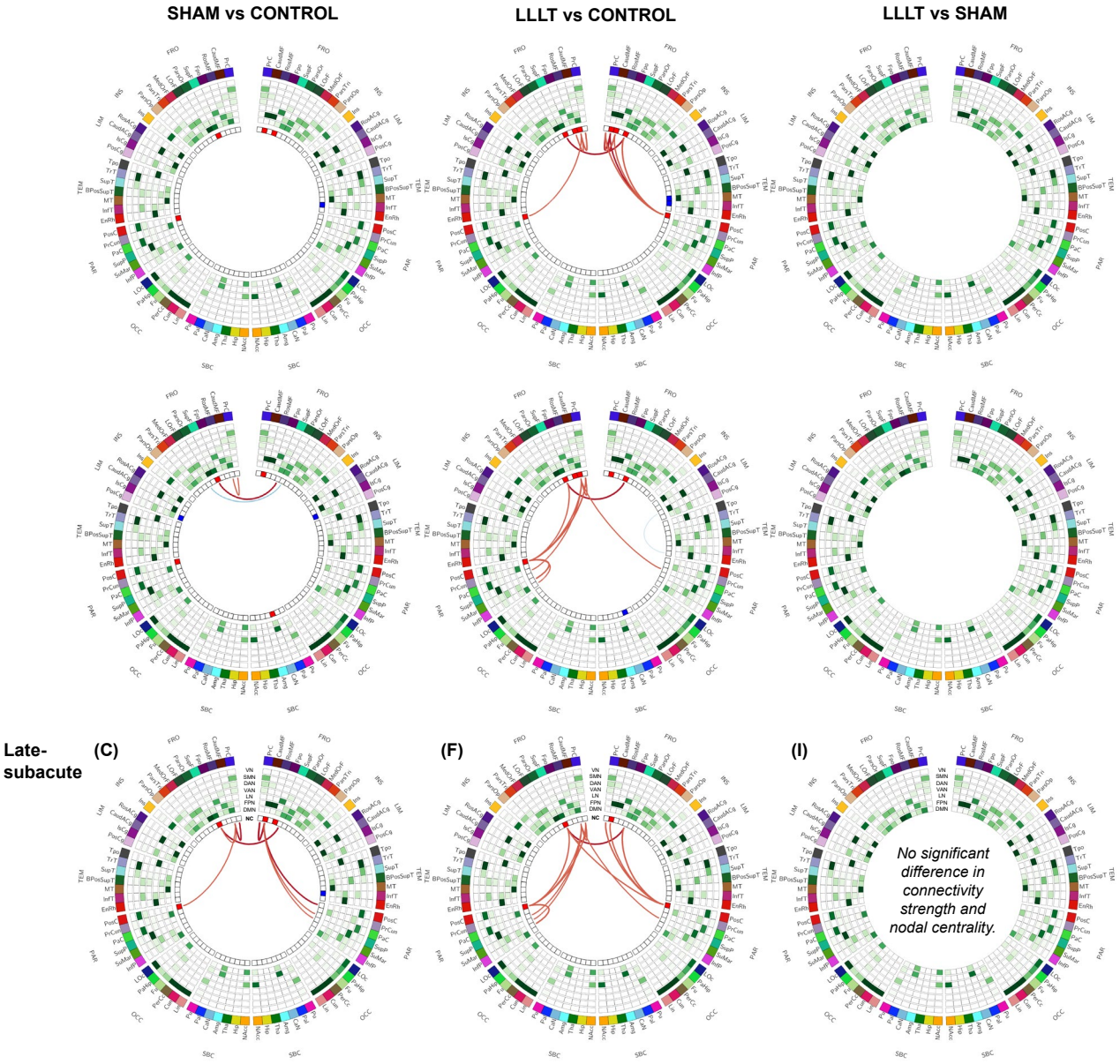
Asymmetrical connectivity profiles were observed in the comparison of LLLT-treated patients vs. healthy controls during the subacute phase (Figure 3E) and in the comparison of sham-treated patients vs. healthy controls during the late-subacute phase (Figure 3C), with more connections showing significantly greater connectivity strength in the patients on the left side. Comparing these two profiles with the symmetrical ones in the comparison of LLLT-treated patients vs. healthy controls during the acute (Figure 3D) and late-subacute phases (Figure 3F) suggests some modulating effect of LLLT; the effect of LLLT was manifest in the first week (acute phase) and three months (late-subacute phase) following moderate TBI.

The considerable resemblance in the connectivity profiles responding to TBI only (i.e., sham-treated patients vs. healthy controls; Figures 3A-3C) and the combined effect of TBI and LLLT (i.e., LLLT-treated patients vs. healthy controls; Figure 3D-3F), suggests that LLLT may prefer to enhance the hyperconnectivity from the neighboring resources instead of pulling the resources from distant structures resulting in a significant alteration of the connectivity profile in the recovery process from TBI. In addition, there is a sign of enhanced hyperconnectivity to LLLT, as suggested by the cross-sectional comparisons between LLLT-treated patients and healthy controls. However,

the effect of LLLT on each brain region/connection may be either small or heterogeneous among patients for the significant differences in the direct cross-sectional comparisons between LLLT- and sham-treated patients.

1.5 Supplementary Note 5: Summary of connectivity results corrected at the threshold of 1% false discovery rate (p_{fdr}<0.01)

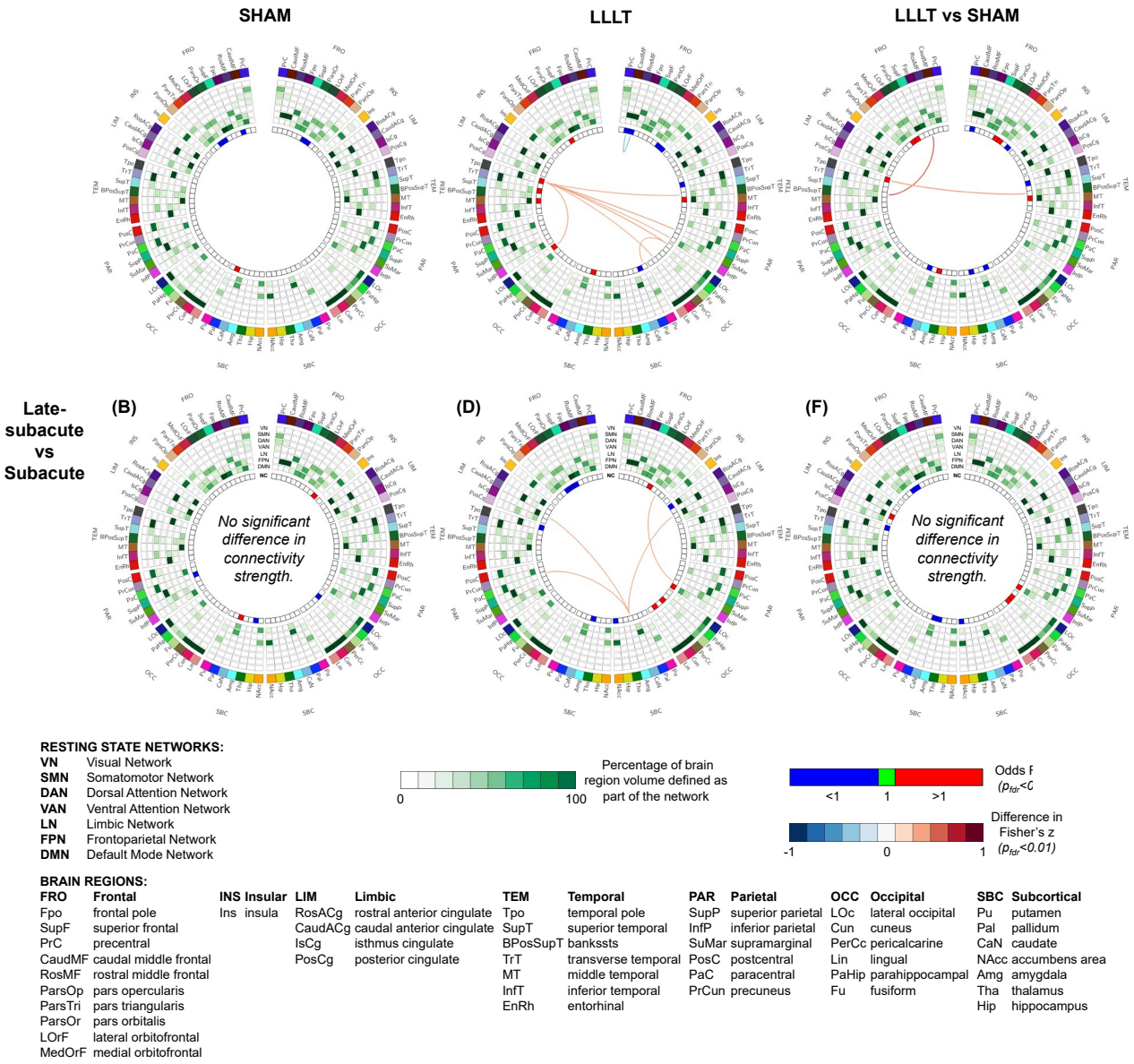
We used the same method described in the main text to analyze the resting state imaging data but the false discovery rate of the multiple comparisons was controlled using a threshold of 1% false discovery rate (p_{fdr}<0.01). The group results corrected at a stringent level of p_{fdr}<0.01 continued to show the characteristic 'M' connectivity profile in comparing LLLT-treated patients and healthy controls during the acute (Supplementary Figure 3D) and late-subacute phases (Supplementary Figure 3F). Such characteristic connectivity profile was only observed during the late-subacute phase in the comparison between sham-treated patients and control subjects (Supplementary Figure 3C). In addition, significant differences in the temporal changes of nodal centrality and connectivity strength from the acute to the subacute phases were also observed between sham- and LLLT-treated patients (Supplementary Figure 4E).



BRAIN REGIONS:

FRO	**Frontal**	**INS**	**Insular**	**LIM**	**Limbic**	**TEM**	**Temporal**	**PAR**	**Parietal**	**OCC**	**Occipital**	**SBC**	**Subcortical**
Fpo	frontal pole	Ins	insula	RosACg	rostral anterior cingulate	Tpo	temporal pole	SupP	superior parietal	LOc	lateral occipital	Pu	putamen
SupF	superior frontal			CaudACg	caudal anterior cingulate	SupT	superior temporal	InfP	inferior parietal	Cun	cuneus	Pal	pallidum
PrC	precentral			IsCg	isthmus cingulate	BPosSupT	banksst	SuMar	supramarginal	PerCc	pericalcarine	CaN	caudate
CaudMF	caudal middle frontal			PosCg	posterior cingulate	TrT	transverse temporal	PosC	postcentral	Lin	lingual	NAcc	accumbens area
RosMF	rostral middle frontal					MT	middle temporal	PaC	paracentral	PaHip	parahippocampal	Amg	amygdala
ParsOp	pars opercularis					InfT	inferior temporal	PrCun	precuneus	Fu	fusiform	Tha	thalamus
ParsTri	pars triangularis					EnRh	entorhinal					Hip	hippocampus
ParsOr	pars orbitalis												
LOrF	lateral orbitofrontal												
MedOrF	medial orbitofrontal												

Supplementary Figure 3. Connectograms showing the odds ratio of nodal centrality (NC) and the estimates of the differences in connectivity strength indicated by the differences in Fisher transformed z values in the cross-sectional comparisons by group (Sham vs. Control, LLLT vs. Control, and LLLT vs. Sham) during the acute, subacute, and late-subacute phases. The parcellated brain regions are assigned with unique RGB colors defined in Freesurfer software[5] (outermost circular track), and the labels are at the bottom of the figures. The percentage of voxels in each brain region defined as part of the resting-state networks (VN, SMN, DAN, VAN, LN, FPN, and DMN)[7,8] is represented by a green color scale ranging from 0 to 100, next to the ring of brain region labels. The red color in the innermost circular track labeled with 'NC' in the connectogram represents odds ratios of nodal centrality greater than 1, while the blue color represents odds ratios smaller than 1. The green color is assigned to odds ratio of nodal centrality equal to 1. The positive differences in connectivity strength in each comparison are mapped with red lines, and the negative differences are mapped with blue lines. Dark colors represent large differences in connectivity strength. All the comparisons are corrected at $p_{fdr}<0.01$.



Supplementary Figure 4. Connectograms showing the odds ratios of nodal centrality (NC) and the estimates of the differences in connectivity strength indicated by the differences in Fisher transformed z values in the temporal comparisons (Subacute vs. Acute, and Late-subacute vs. Subacute) by treatment group (Sham and LLLT) and between treatment groups (Sham vs. LLLT). The parcellated brain regions are assigned with unique RGB colors defined in Freesurfer software[5] (outermost circular track), and the labels are at the bottom of the figures. The percentage of voxels in each brain region defined as part of the resting-state networks (VN, SMN, DAN, VAN, LN, FPN, and DMN)[7,8] is represented by a green color scale ranging from 0 to 100, next to the ring of brain region labels. The red color in the innermost circular track labeled with 'NC' in the connectogram represents odds ratios of nodal centrality greater than 1, while the blue color represents odds ratios smaller than 1. The green color is assigned to the odds ratio of nodal centrality equal to 1. The positive differences in connectivity strength in each comparison are mapped with red lines, and the negative differences are mapped with blue lines. Dark colors represent large differences in connectivity strength. All the comparisons are corrected at p_{fdr}<0.01.

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