S.Table 1 the cross-validation analysis of all the input EEG data.

|  |  |
| --- | --- |
| No. of Ms | CV errors |
| **4** | **0.028** |
| 5 | 0.029 |
| 6 | 0.032 |
| 7 | 0.034 |
| 8 | 0.037 |

S.Table 2 One-way ANOVA tests of Ms parameters between the resting-state, imaging needling in left KI3 and in right KI3.

|  |  |  |
| --- | --- | --- |
| Microstate parameters | F | P |
| **Coverage** |  |  |
| Ms A | 89.67  | <0.001 |
| Ms B | 31.69  | <0.001 |
| Ms C | 121.30  | <0.001 |
| Ms D | 0.27  | 0.761  |
| **Occurrence** |  |  |
| Ms A | 71.39  | <0.001 |
| Ms B | 28.81  | <0.001 |
| Ms C | 76.04  | <0.001 |
| Ms D | 1.32  | 0.274  |
| **Duration** |  |  |
| Ms A | 62.67  | <0.001 |
| Ms B | 15.85  | <0.001 |
| Ms C | 85.69  | <0.001 |
| Ms D | 0.09  | 0.914  |
| **Transition Probability** |  |  |
| MsA to MsB | 70.67  | <0.001 |
| MsA to MsC | 1.78  | 0.175  |
| MsA to MsD | 42.19  | <0.001 |
| MsB to MsA | 88.68  | <0.001 |
| MsB to MsC | 101.55  | <0.001 |
| MsB to MsD | 0.22  | 0.805  |
| MsC to MsA | 6.89  | 0.002  |
| MsC to MsB | 3.92  | 0.024  |
| MsC to MsD | 24.21  | <0.001 |
| MsD to MsA | 87.26  | <0.001 |
| MsD to MsB | 55.20  | <0.001 |
| MsD to MsC | 11.79  | <0.001 |

S.Table 3 The results of post hoc analysis using Tukey-Kramer after ANOVA tests between the resting-state, imaging needling in left KI3 and in right KI3#.

#The paired-comparisons were performed using post hoc Tukey-Kramer tests. ##These corresponding parameters showed no significant differences in the ANOVA tests were not taken into post hoc analysis. Ms, Microstate.

|  |  |  |  |
| --- | --- | --- | --- |
| Microstate parameters | Resting-state vs. imaging needling in left KI3 | Resting-state vs. imaging needling in right KI3 | Imaging needling in left KI3 vs. right KI3 |
| Difference | *P* | Difference | *P* | Difference | *P* |
| **Coverage** |  |  |  |  |  |  |
| Ms A | -14.636  | <0.001 | -9.703  | <0.001  | 4.934  | <0.001  |
| Ms B | 1.178  | 0.617  | -7.989  | <0.001  | -9.167  | <0.001  |
| Ms C | 13.811  | <0.001  | 17.161  | <0.001  | 3.350  | 0.014  |
| Ms D## | —  | — | —  | — | —  | — |
| **Occurrence** |  |  |  |  |  |  |
| Ms A | -1.354  | <0.001  | -1.079  | <0.001  | 0.276  | 0.061  |
| Ms B | 0.156  | 0.540  | -0.880  | <0.001  | -1.037  | <0.001  |
| Ms C | 1.164  | <0.001  | 1.639  | <0.001  | 0.476  | 0.002  |
| Ms D## | —  | — | —  | — | —  | — |
| **Duration** |  |  |  |  |  |  |
| Ms A | -14.808  | <0.001  | -8.808  | <0.001  | 6.000  | <0.001  |
| Ms B | 0.872  | 0.837  | -6.992  | <0.001  | -7.864  | <0.001  |
| Ms C | 14.600  | <0.001  | 17.176  | <0.001  | 2.576  | 0.169  |
| Ms D## | —  | — | —  | — | —  | — |
| **Transition Probability** |  |  |  |  |  |  |
| MsA to MsB | -14.296  | <0.001  | -13.611  | <0.001  | 0.686  | 0.869  |
| MsA to MsC | —  | —  | — | —  | — | —  |
| MsA to MsD | 12.047  | <0.001  | 11.204  | <0.001  | -0.843  | 0.833  |
| MsB to MsA | -14.914  | <0.001  | -14.024  | <0.001  | 0.890  | 0.759  |
| MsB to MsC | 15.536  | <0.001  | 14.849  | <0.001  | -0.686  | 0.843  |
| MsB to MsD## | —  | —  | — | —  | —  | — |
| MsC to MsA | -0.029  | 1.000  | -4.419  | 0.005  | -4.390  | 0.005  |
| MsC to MsB | 0.664  | 0.883  | -2.999  | 0.086  | -3.663  | 0.027  |
| MsC to MsD | -0.635  | 0.875  | 7.418  | <0.001  | 8.053  | <0.001  |
| MsD to MsA | -16.428  | <0.001  | -12.185  | <0.001  | 4.243  | 0.004  |
| MsD to MsB | 16.114  | <0.001  | 6.488  | <0.001  | -9.626  | <0.001  |
| MsD to MsC | 0.315  | 0.969  | 5.698  | <0.001  | 5.383  | <0.001  |

S.Table 4 The comparisons of Ms parameters between the resting-state and real needling in right KI3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Microstate parameters | Resting-state(mean±SD) | Real needling in right KI3(mean±SD) | *P*# | *t* | *d##* |
| **Coverage** |  |  |  |  |  |
| Ms A | 22.12±5.20  | 26.54±4.91  | 0.033  | 2.371  | 0.873  |
| Ms B | 30.36±5.18  | 23.40±5.04  | 0.001  | 4.017  | -1.362  |
| Ms C | 19.33±5.37  | 30.96±5.58  | <0.001  | 7.050  | 2.124  |
| Ms D | 28.18±5.48  | 19.10±3.80  | <0.001  | 7.388  | -1.925  |
| **Occurrence** |  |  |  |  |  |
| Ms A | 4.35±0.60  | 4.90±0.66  | 0.038  | 2.233  | 0.874  |
| Ms B | 5.20±0.56  | 4.49±0.69  | 0.004  | 3.422  | -1.120  |
| Ms C | 3.94±0.62  | 5.17±0.64 | <0.001  | 8.409  | 1.949  |
| Ms D | 5.00±0.68  | 3.99±0.56 | <0.001  | 7.438  | -1.635  |
| **Duration** |  |  |  |  |  |
| Ms A | 50.28±5.84  | 53.91±5.01 | 0.036  | 2.298  | 0.667  |
| Ms B | 58.16±5.03  | 51.70±5.38 | 0.001  | 3.998  | -1.241  |
| Ms C | 48.28±6.63  | 59.91±8.38 | 0.001  | 4.342  | 1.538  |
| Ms D | 56.07±6.74  | 47.68±4.69 | <0.001  | 4.977  | -1.447  |
| **Transition Probability** |  |  |  |  |  |
| MsA to MsB | 31.97±7.51  | 32.19±6.32 | <0.001  | 0.138  | 0.032  |
| MsA to MsC | 28.09±5.76  | 40.27±6.49 | <0.001  | 6.486  | 1.987  |
| MsA to MsD | 39.95±7.07  | 27.54±4.77 | <0.001  | 8.107  | -2.059  |
| MsB to MsA | 31.62±6.24  | 38.78±6.84 | 0.011  | 2.920  | 1.094  |
| MsB to MsC | 41.51±6.44  | 33.87±7.14 | 0.004  | 3.352  | -1.125  |
| MsB to MsD | 26.87±6.08  | 27.36±4.46 | <0.001  | 0.353  | 0.091  |
| MsC to MsA | 28.31±6.57  | 33.62±6.24 | 0.037  | 2.259  | 0.829  |
| MsC to MsB | 37.16±5.21  | 29.76±8.22 | 0.005  | 3.288  | -1.076  |
| MsC to MsD | 34.54±5.84  | 36.62±7.20 | <0.001  | 0.994  | 0.318  |
| MsD to MsA | 37.63±7.14  | 34.37±6.70 | <0.001  | 1.845  | -0.472  |
| MsD to MsB | 26.21±6.17  | 38.91±6.99 | <0.001  | 6.759  | 1.926  |
| MsD to MsC | 36.16±6.78 | 26.72±4.93 | <0.001  | 6.827  | -1.591  |

# P, Paired *t* test after FDR correction. ##cohen’s d.

S.Table 5 The comparisons of Ms parameters between needling imagery and real needling in right KI3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Microstate parameters | Needling imagery(mean±SD) | Real needling in right KI3(mean±SD) | *P*# | *t* | *d##* |
| **Coverage** |  |  |  |  |  |
| Ms A | 1.10±3.20  | -1.64±4.04 | 0.014  | 2.670  | 0.771  |
| Ms B | 0.84±4.61  | -1.26±5.04 | 0.000  | 1.523  | 0.440  |
| Ms C | -0.82±3.87  | 1.23±6.04 | 0.000  | 1.344  | -0.423  |
| Ms D | 0.32±5.23  | -0.48±4.04 | 0.000  | 0.584  | 0.168  |
| **Occurrence** |  |  |  |  |  |
| Ms A | 0.10±0.37  | -0.15±0.56 | 0.000  | 1.734  | 0.542  |
| Ms B | 0.12±0.56  | -0.19±0.69 | 0.000  | 1.742  | 0.503  |
| Ms C | -0.17±0.73  | 0.25±0.73 | 0.000  | 1.997  | -0.577  |
| Ms D | 0.06±0.52  | -0.09±0.53 | 0.000  | 0.949  | 0.274  |
| **Duration** |  |  |  |  |  |
| Ms A | 1.38±4.10  | -2.06±4.49 | 0.012  | 2.799  | 0.808  |
| Ms B | 1.72±5.97  | -2.58±5.38 | 0.014  | 2.596  | 0.749  |
| Ms C | -1.39±4.56  | 2.09±8.16 | 0.000  | 1.737  | -0.558  |
| Ms D | 0.75±7.79  | -1.12±4.99 | 0.000  | 1.037  | 0.275  |
| **Transition Probability** |  |  |  |  |  |
| MsA to MsB | 4.02±5.89  | -6.03±5.29 | 0.000  | 6.150  | 1.775  |
| MsA to MsC | -5.07±5.30  | 7.60±6.22 | 0.000  | 7.727  | -2.231  |
| MsA to MsD | 1.33±7.71  | -1.99±4.17 | 0.000  | 1.964  | 0.507  |
| MsB to MsA | 0.44±3.33  | -0.66±5.98 | 0.000  | 0.748  | 0.241  |
| MsB to MsC | -2.15±4.44  | 3.22±6.85 | 0.003  | 3.100  | -0.973  |
| MsB to MsD | 1.35±5.13  | -2.03±4.29 | 0.019  | 2.434  | 0.703  |
| MsC to MsA | 1.44±4.21  | -2.16±5.51 | 0.014  | 2.613  | 0.754  |
| MsC to MsB | 2.77±4.38  | -4.15±8.17 | 0.001  | 3.470  | 1.122  |
| MsC to MsD | -4.40±4.77  | 6.60±6.34 | 0.000  | 6.999  | -2.020  |
| MsD to MsA | 0.42±5.03  | -0.63±6.26 | 0.000  | 0.660  | 0.190  |
| MsD to MsB | -0.79±5.93  | 1.18±6.23 | 0.000  | 1.129  | -0.326  |
| MsD to MsC | -0.23±4.61  | 0.34±4.13 | 0.000  | 0.446  | -0.129  |

# *P*, two sample *t* test with resting-state regressed out after FDR correction. ##cohen’s d.