



**Supplementary Figure 1. sLORETA Statistics for Upper- and Lower-Body Stimuli.** Non-parametric permutation tests indicated differences in A) upper- and B) lower-body CRT source activity for treatments (green), timepoints (blue), and treatment x timepoint interactions (grey). Timing of differences is indicated above each image and highlighted areas of the grand-averaged IC-filtered ERP waveform depicted at the bottom of each panel. For each segment, a 250Hz sampling rate, 40Hz low pass filter, and initial significance level of  $p \leq 0.05$  resulted in 3,071 randomizations with a multiple-comparison-adjusted significance level of  $p = 0.016$ . For coronal images, the right hemisphere is on the right. For the upper body, from 144-196ms, there was decreased activity in the medial dorsal nucleus (6.2, -22.0, 6.0) and posterior cingulate (BA 23: 6.2, -36.5, 25.0) after exercise ( $F=22.2$ ,  $p=0.001$ ). From 400-416ms, activity was lower in the anterior cingulate (BA 25: 4.8, 5.9, -11.0) and postcentral gyrus (18.9, -42.1, 73.7) ( $F=17.7$ ,  $p=0.006$ ). From 440-444ms, activity increased in the medial dorsal nucleus (-2.2, -16.7, 1.7) ( $F=17.3$ ,  $p=0.016$ ). From 556-560ms, there was a reduction in activity in the caudate body (11.9, 15.7, 3.8) ( $F=19.0$ ,  $p=0.007$ ). For the lower body, there were also a number of generalized responses to exercise, including: 1) less activity in the parahippocampal gyrus from 192-200ms (BA 30: -10.0, -47.5, 2.9) ( $F=17.6$ ,  $p=0.004$ ); 2) less activity in the insula from 380-424ms (38.4, -14.6, 7.1) ( $F=16.6$ ,  $p=0.004$ ); 3) increased activity in the medial dorsal nucleus from 712-720ms (4.1, -16.0, 3.6) ( $F=15.9$ ,  $p=0.010$ ); and 4) increased activity in the precuneus (BA 31: 5.5, -62.2, 30.2) and posterior cingulate from 836-888ms (BA 30: 5.5, -46.1, 22.5) ( $F=21.6$ ,  $p=0.002$ ). sLORETA: statistical low-resolution electromagnetic tomography; CRT: choice reaction test; ERP: event-related potential.