**Supplementary Results**

**Evolution of Bi-SAT and Bi-Co in individual stroke patients:**

All patients retained the bimanual motor skill at one week indicated by the improvements in Bi-SAT and Bi-Co under both real and sham conditions except for P6, 14, 16 and 18 who showed a deterioration after one of the sessions. P14 & P16 deteriorated in Bi-SAT in the retention session after sham dual-tDCS (-11% and -7% respectively; R1 compared to baseline). P6 & P18 deteriorated in Bi-Co in the retention session after sham (-20% and -4% respectively). In contrast, three patients (P1, P13 & P20) reached more than 100% of improvements in Bi-SAT from baseline to after60 in real dual-tDCS condition and one patient after sham condition (P21).

**Generalization**

Generalization was further evaluated with bimanual REACHING. For none of the five targets (±45°, ±22.5°, 0)), the second GLMM detected a significant effect of stimulation (real vs. sham) on the difference between baseline and R1. (Supplementary Table 3, Supplementary Figure 3)

**Supplementary Figure legends:**

**Population**

**Supplementary Figure 1. CONSORT flowchart.** The Stroke database of the CHU UCL Namur (Mont-Godinne) was screened for patients corresponding to the inclusion/exclusion criteria. After providing written informed consent, the selected patients were randomized using the randomisation criteria (see below) by a third person and the Eldith® codes for real/sham stimulation were given to the experimenter. Both the experimenter and patients were blinded about the type of stimulation (real/sham). Some patients had to be excluded because they were not able to perform the bimanual task, their UL being either too paretic (plegic) or too spastic.

**Supplementary Figure 2. MRI scans of the patients.** P6, P12 and P13 had Diffusion-Weighted Imaging (DWI). P8 and P18 had T1-weighted MRI. For P10 and P19, only the report of the radiologist was available indicating a small cortico-subcortical stroke of the left precentral-postcental gyri in P10 and a cortico-subcortical infarction of the right fronto-parietal areas (superficial MCA territory) for P19. All other patients had FLAIR T2-weighted MRI.

**Supplementary Figure 3. Bimanual REACHING.** Progression of Bi-SAT & Bi-Co for targets set at ± 22.5° and ± 45°, and that of Bi-SAT for 0° target over five time points: B= baseline; after= after stimulation; after60= 60 minutes after stimulation; R1= before the first retention test; R2= after the second retention test, for real and sham dual-tDCS conditions. Bi-SAT data are presented on a logarithmic scale, and were logarithmically transformed.

**Supplementary Figure 4. Box and Blocks (B&B).** Number of blocks transferred by the paretic hand (PH) and non-paretic hand (NPH) for both real and sham dual-tDCS conditions in five time points: B= baseline; after= after stimulation; after60= 60 minutes after stimulation; R1= before the first retention test; R2= after the second retention test.