Method

Due to violations of normality in the error rate data across the three tasks, we applied Aligned Rank Transform (ART) ANOVA using R version 4.4.0, with task type, intervention condition, and test time as within-subjects factors.

Result

The ART ANOVA revealed no significant three-way interaction among task type, intervention condition, and test time, *F*(2, 462) = 0.94, *p* = 0.39. Given this non-significant interaction, we conducted separate 2 (intervention condition: exercise vs. sitting) × 2 (test time: before class vs. after class) ART ANOVAs for each task to examine task-specific patterns. However, no significant main effects or interactions were found for any of the three tasks (Naming: *F*(1, 126) = 0.03, *p* = 0.87; Inhibition: *F*(1, 126) = 0.76, *p* = 0.38; Switching: *F*(1, 126) = 1.38, *p* = 0.24). The full results are presented in Table S1.

**Table S1:** Error Rate to Exercise/Sitting before and after the Real Class (N = 43).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Exercise | | Sitting | | *F* | *p* |
| Before | After | Before | After |
| Error rate (%) |  |  |  |  | *F*(2,462) = 0.94 | 0.39 |
| Naming | 3.14 ± 3.03 | 3.60 ± 3.54 | 4.38 ± 5.11 | 4.46 ± 4.63 | *F*(1,126) = 0.03 | *0.87* |
| Inhibition | 5.89 ± 4.58 | 5.93 ± 4.63 | 5.85 ± 4.84 | 6.90 ± 5.19 | *F*(1, 126) = 0.76 | *0.38* |
| Switching | 12.25 ± 9.05 | 11.63 ± 7.66 | 11.32 ± 7.64 | 9.77 ± 7.59 | *F*(1, 126) = 1.38 | *0.24* |