

**Preparation of response sequence complexity and movement duration:  
Inferences from lateralized readiness potential**

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The purpose of this study was to reveal the functional loci of two movement parameters, namely, response sequence complexity and movement duration, when they were organized by the central motor program. Twenty-eight undergraduate students (sixteen female, all right handed, mean age:  $24.5 \pm 2.2$  yrs) participated in this study. Participants performed a choice reaction time task, in which they responded to the letters L and R by tapping their left and right fingers, respectively, with different response sequences and movement duration. The onsets of lateralized readiness potential (LRP) were measured using baseline-deviation technique after applying the jackknife-based procedure. Both response sequence complexity and movement duration yielded

main effects on reaction time (RT), showing longer RTs in the more complex and longer-duration conditions. No interaction was observed. The onsets of stimulus-locked LRP did not differ among conditions. However, significant main effects of both response sequence complexity and movement duration were found on the response-locked LRP onsets, showing longer latencies in the more complex and longer-duration conditions. Behavioral data indicated the existence of two independent stages associated with response sequence complexity and movement duration according to additive factor method logic. Electrophysiological evidence suggests the motoric loci of both factors in independent stages.