**Abstract Submission Form**

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**Abstract Formatting Checklist**

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| **Item** | **Content** | **Checklist** |
| Font | Times New Roman |  |
| Line Spacing | 1.15x |  |
| Paper Title | Font size 14; Centered; Bold |  |
| Author Names | Font size 12; Centered; Bold |  |
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| Main Text | Font size 12; Left-aligned;  Within 800 words; Single paragraph; Includes keywords |  |
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**Example**

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| **Title**  **Identifying units of discrete movement in space-time constraints**  **Hsieh, T-Y1, Liu, Y-T1, Newell, KM2**  **1 NTNU (Taipei, Taiwan) 2 UGA (Athens, GA, USA)**  **Abstract**  Traditionally, submovements in the final portion of movements have been viewed as accuracy adjustments or movement corrections. However, by manipulating movement mode (discrete, reciprocal, and passing tasks) and target size (small and large), the number of submovements and/or different types of submovements might result from particular task constraints. **Purpose:** the purpose of present study was to systematically manipulate the different time and space criteria to provide a comprehensive test of movement velocity effects on the properties of submovements. **Methods:** Twelve participants completed 3 distances x 5 time conditions each with 100 trials in line drawing task and the order of different space-time conditions was randomly assigned for each participant. We measured the kinematic structure of the trajectory by implementing the algorithm described by Chua and Elliott (1993) to examine the quantity and type of submovements (no submovement, type 1 & 2: overlapped with increasing and decreasing movement velocity, type 3: undershoot, and type 4: overshoot). Repeated measures ANOVAs were used to examine dependent variables. **Results:** There was a significant interaction of movement amplitude and space-time conditions for number of submovements (*p*<.05). The interaction effects of different types and space-time conditions also reached significance at the 10 cm, 20 cm, and 30 cm amplitude, respectively (*ps*<.05). **Conclusion:** The findings showed that the number of submovements increasingly arise in the slower time matching space-time conditions that may be characterized as motion fluctuations (type 2) rather than corrective submovements. In addition, corrective submovements (type 3 & 4) were more frequently observed in high-speed conditions that may be viewed as reflecting the role of accuracy regulation. Overall, our results show different properties and prevalence of submovements in discrete aiming tasks as a function of movement speed and the space-time constraints.  **Keywords:** sub-movements; Fitts’ Law; speed-accuracy trade-offs |

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