

Effect of different motor patterns on the stability of rhythmic movement

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Producing stable and repeatable movements in various situations is important in sports performance. The purpose of this study is to test the difference of stabilities of periodic movements in different tasks. 20 healthy university students (20-30 years old, right-handed) were told to tap or press periodically by their right hands. Tasks include 9 time intervals (500ms, 750ms, 1000ms, 1250ms, 1500ms, 1750ms, 2000ms, 2500ms, 3000ms), overall 18 conditions were tested in this experiment. Force plate was used to record the time intervals. Absolute error between performances and standard and coefficient of variation were calculated. In tapping tasks, from 2000ms time interval, the stabilities are significantly different comparing to the stability of 500ms time interval ($P < 0.05$), while no significant difference was found in pressing tasks ($P > 0.05$). Differences were also found between tapping and pressing tasks. In 500ms and 750ms time tasks, performances of tapping tasks were more stable than those in pressing tasks ($P > 0.05$). The result shows that coefficient of variation increased with the increasing of length of time interval in both tapping and pressing, especially the coefficient of variation in tapping increased significantly (Interaction: $P < 0.05$). The result shows that in tapping task, stabilities of taps are different between time intervals shorter and longer than about 2 seconds. In relatively short time intervals (shorter than about 1 second), stabilities are significantly different between tapping and pressing.