Expertise differences in *Maai* maneuvers in kendo matches

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**Introduction**

For the last two decades, researchers have conducted a variety of experiments to elucidate the variables that contribute to interactions between two actors engaged in cooperative tasks. However, many of the significant variables involved in interactions between two players engaged in competitive tasks, such as games and sports, remain unclear. For example, current studies do not address the impact of expertise differences on a player’s ability to cope with their opponents or with changes in the environment over the course of a match. We analyzed interpersonal distance (IPD, so-called “Maai”) maneuvers in real kendo matches, and attempted to elucidate differences between six expert and six intermediate players, all of whom had more than 10 years of athletic experience.

**Methods**

We observed IPDs during 12 expert-level and 12 intermediate-level kendo matches. We calculated the frequencies of the preferred IPD, the relative phase of the step toward–away velocities, and the step toward–away in each IPD region. We also measured the possible striking IPDs from which players could strike opponents with a brief, quick action (approximate 350 ms).

**Results**

Intermediate and expert players preferred near (around 1.05 m, *Tsuba-zeriai*) and far (around 2.75 m, *Issoku-itō*) IPDs, making two distinct peaks respectively. However, no relative phase difference was observed in the phase transitions from anti- to in-phase at the boundary of 2.85 m in both groups, which is consistent with findings from our previous research. The step toward–away occurred at the boundary of 2.65 m, and the switching of experts was more precise than that of intermediate players. Additionally, experts stepped toward–away more quickly than intermediate players in all IPD regions. The possible striking IPD was ~2.65 m for both groups.

**Discussion**

Possible striking IPDs reflect each player’s offensive abilities in the context of the constraints imposed by his or her physical limitations and/or the task demands. It seems that this specific IPD (2.65 m) profoundly influenced all other results. All players switched back and forth and executed subtle offensive and defensive maneuvers based on the IPD. Thus, both expert and intermediate players could appropriately maneuver with respect to the IPD. In contrast, experts were able to execute these maneuvers in quick movements, suggesting a greater sensitivity to IPD and the required adjustments.

**Reference**


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