

A Balance Study of Interaction between Martial Art Masters

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Martial art involves intelligent forces, not just physical actions and contacts between offense and defense. Practitioners have been exploring the flow of such forces through the history of martial art. Schools of Chinese martial art are of our interest as they have developed various concepts for controlling such a flow of forces extensively. One of skills for controlling the flow is to listen to or perceive the channel through which the opponent releases the force. The strategy that the ancient masters found to nullify the attack is to make no room between them so that the force finds no space to ignite itself. Keeping the contact without pushing or being pushed by the opponent requires a certain skill. Obvious question is how he is able to follow the opponent's motion without delay. With the goal in mind, we studied how the moment of instantaneous response can be identified. We employed four Wii Fit balance boards to collect pressure data of four feet of the two subjects and asked the pair of practitioners to exercise the pushing hand with each other. We analyzed the data to induce the impulse response functions between time series of pressures. We found that the response of the master is instantaneous to the opponent. Our finding may lead to establishing criteria for evaluating the degree of mastery in perceiving the channel through which a force is released.

Keyword: martial art, interaction, channel, perception