

## A KINETIC STUDY ON THE MOVEMENT OF YEMAFENZONG IN TAIJIQUAN

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**KEY WORDS:** Taijiquan, Yemafenzong, kinetic analysis

**INTRODUCTION:** Taijiquan actions are required to be steady, smooth and continuous. A detailed kinetic analysis was chosen in order to provide clarification of these features. For this study, the movement of Yemafenzong was analyzed and some significant results were obtained.

**METHODS:** Seven subjects participated in this study, one of which was a Wushu teacher. The subjects performed the action of Yemafenzong while they were videotaped with a video camera placed perpendicular to the front of them. The pictures were analyzed on a video motion analyzer so that the kinetic quantities could be obtained. The data obtained from the calculation were treated by a digital filter with the value of the cut-off frequency of 8.

**RESULTS:** The movement was divided into two phases. In the first phase, the track of the right hand was a circle. The teacher provided the example, with the diameter of the circle measuring 0.517m, while the track of the left hand formed a larger semicircle. At the beginning of the second phase, both hands struck to the left along two tangent lines of the circle, drawn by the right hand in the first phase. Then the C.G. of the body went down. The left hand reached its largest velocity at the instant when the C.G. of the body arrived at its lowest point, also located in the middle of the two feet. At the same time, the two soles of the feet were pressed firmly on the ground, and the step-width increased to its largest value. For the teacher, the rate of the step-width to the body height was 63%. Finally the two legs formed a bow step and the movement ended. Throughout the whole process, the trunk was kept almost vertical.

**DISCUSSION:** The above results described the main features of Taijiquan actions. The whole body must be well coordinated so that the hand can draw a perfect circle while the other parts of the body are moving simultaneously. The origin of each movement of Taijiquan is related to attacking and defending. The second phase of the movement of Yemafenzong, was originally an attack. Therefore, when performing this movement, the body must be as stable as possible so that one could carry out both attack and defense effectively. Good stability demands several conditions. Lower C.G. position and larger supporting area are the most important ones that apply to all participants. The kinetic analysis showed that all these conditions were well represented.

### REFERENCES:

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