A COMPARATIVE STUDY ON KINEMATICS PARAMETERS BETWEEN THE SEPAK KUDA SERVE AND THE SEPAK SILA SERVE IN SEPAK TAKRAW

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INTRODUCTION: The most important and effective skill in a sepak takraw game is the serve. In 1995, during the 18th SEA Games, a new technique of serving, 'sepak kuda' was introduced. The sepak kuda serve is well known as the most powerful serve compared to the more traditional serve of 'sepak sila'. The purpose of this study was to make a comparative study on kinematics parameters in both techniques in order to identify specific characteristics of the serves and consequently to give guidelines for training and mastering especially on the new technique to coaches and players.

METHODS: Events took place during the 21st SEA Games held in Kuala Lumpur from 9th – 15th September 2001. The control object used for calibration was a calibration pole, which enabled coverage of a larger volume (the size of the court). Six-synchronized video cameras were used to capture the calibration poles and the performances of the players at a frame rate of 50 Hz. The Direct Linear Transformation (DLT) method was used to collect three-dimensional (3-D) coordinates of 21 body landmarks and the center of the sepak takraw ball for each subject in each trial. For analysis, two 'tekongs' who performed two different types of serving namely the sepak kuda and sepak sila were chosen. Videos of selected serves executed by each tekong were digitized and calculated using the Peak Motus 2000 System software.

RESULTS AND DISCUSSION: The contribution of the velocity of foot at impact played a significant role in contributing the ball velocities of each serve. In serving the sepak kuda, the technique to execute the serve is to use the front of the foot or the instep of the foot. Therefore, the results obtained showed that the part of the foot that contributed the most during the execution of the sepak kuda serve was the toe with the mean linear velocity at impact of 11.27 m/s (40.56 kph). The use of the inside of the foot for executing the sepak sila serve showed that there was little to differentiate the contribution between the heel and the toe, with the mean linear velocity of the heel 10.45 m/s (37.63 kph) while the mean linear velocity of the toe was 10.16 m/s (36.53 kph), both at impact. The data on the serving angle (angle between the support leg and the serving leg) showed that the angle reached during impact for sepak kuda was slightly greater than the result obtained for sepak sila. The mean serving angle reached by the tekong executing the sepak kuda was 157° while for the sepak sila was 155°. Due to these facts, the resulting flight of the ball after impact showed that sepak kuda produced a steeper flight trajectory compared to the sepak sila and thus produced a greater ball velocity. The mean of the maximum linear velocities of the ball obtained for the sepak kuda serve was 19.33 m/s or 69.59 kph compared to the mean of the maximum linear velocities of 17.44 m/s or 62.78 kph obtained for the sepak sila serve. These maximum ball velocities were achieved at the range of 0.1 - 0.12 s after ball impact.

CONCLUSION: From this early observation, the study showed that the sepak kuda serve performs better than the sepak sila serve in terms of the kinematics parameters.

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