

# POSTURAL DIFFERENCES IN TURNING KICK VS BACK THRUST KICK AMONG TAEKWON-DO PLAYERS: DOMINANT LEG

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**KEYWORDS:** Taekwondo, back thrust kick, turning kick

**INTRODUCTION:** There are many techniques in Taekwondo involving feet and hands. Through observations, athletes prefer to use techniques, which are easy to score and give more advantages of winning the game. In order to perform the quick movement, the body must rapidly adjust to the differences in posture to maintain a state of balance. Limited researches have been done on dynamic postural in Taekwondo. The purpose of this study is to determine the differences between the postural response to a turning kick (Dollyo Chagi) and back thrust kick (Dwit Chagi). To achieve the goal stated, 3D biomechanical analysis is done using kinematics approach. The parameters to be obtained are linear displacement of body centre of mass, kicking time duration and velocity of foot.

**METHOD:** The event was recorded using a videography system with five 50Hz cameras. All cameras were gen-locked to provide shutter synchronization. As for calibration purposes, a calibration frame with 25 calibration points was used. Twenty professional players (12 males, 8 females) were selected where they must be involved for at least 5 years in Taekwondo and have experiences in any national level championship. 20 reflective markers were placed on the subject in different locations. The subjects were asked to perform two types of kick; direct back leg turning kick and back thrust kick. Videos of the selected kicks were edited using an NTSC Panasonic AG-7350 videocassette recorder and each trial was digitized and calculated using Motus 9 System software. Subsequent to digitizing, the raw data were smoothed using the Butterworth filter with the cut-off frequency of 6 Hz.

**RESULTS AND DISCUSSION:** Preliminary results indicated that, the back thrust kick took about 1.4s for recovery period and returned to steady stand, as compared with turning kick, which only took 0.9s. The back thrust kick took only 0.4s to landing after impact compared to 0.5s with turning kick. The velocity of turning kick reached 3.5m/s but for the back thrust kick, it only reached 1.9m/s. Recovery period was the duration of time taken for the leg to return to steady stance after the leg dropped to the ground. This result showed us that, the turning kick gave a faster movement than the back thrust kick. Other parameters that will be investigated are the body centre of mass and joint angles such as the lower limb angles and the body lean angle. If the body centre of mass indicates the balances of the kicking, the study will prove that the turning kick gives more balance than the back thrust kick. The data taken from all subjects will undergo statistical analysis using the SPSS software.

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