The Impact of the Angular Displacements of Torso, Forearm, Arm and Hand on Serving Speed of Wheelchair Tennis Service

Y.U.D. Wijesinghei* and A.W.S. Chandana

Department of Sports Sciences and Physical Education, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka.

*yasiru1211@gmail.com

The study aimed to observe the impact of the angular displacements of the torso, forearm, arm, and hand on the serving speed (SS) of the Wheelchair Tennis. Torso angular displacement (TAD), arm angular displacement (AAD), forearm angular displacement (FAD) and hand angular displacement (HAD) were considered as the variables of the model. Six players of the Sri Lanka National Wheelchair Tennis team were selected for the study (above twelve years of training age). The serving phase (102 services) of selected players were observed using three cameras (50 Hz) on three sagittal planes. The contacting height, flight time of the ball, TAD, AAD, FAD and HAD were recorded by using Kinovia (version 0.9.5). Linear motion equations were used to calculate SS. The relationship of selected variables was gained by multiple linear regression (SS = 14.556 + 0.049TAD + 0.818AAD + 0.084FAD + 0.221HAD). TAD (B=0.0489), FAD (B=0.084) and HAD (B=0.2208) and AAD (B=0.818) were positively correlated with SS. The coefficient values of FAD (p=0.049), AAD (p=0.015) and HAD (p=0.00) were significant. Furthermore, the study concludes that AAD is the most important angular displacement for SS of Wheelchair Tennis sport.

Keywords: Arm, Hand, Service, Tennis, Wheelchair