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Kinematic Analysis of the Release Phases in Male Javelin Throwers in Sri Lanka's National Athletic Pool

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This study investigates the kinematic analysis of the Release Phase (RP) in Sri Lankan national javelin throwers to elucidate factors influencing their throwing performance. The primary objective was to analyze seven key kinematic variables during the RP and to explore their relationship with throwing distance. Employing a descriptive research design, 20 athletes from the national pool of JT were selected as the sample. High-speed cameras captured the RP from a sagittal plane, recording variables including Lead Foot/Foul Line Distance, Height of Release, Release Velocity, Release Angle, Attitude Angle, Angle of Attack, and Stride Length. Data analysis was conducted using Kinovea software (version 0.9.3) and SPSS software 22 for the Pearson correlation test. The results indicate a significant positive correlation between throwing distance and release velocity ($r = 0.753$, $P < 0.001$), underscoring the pivotal role of velocity in performance enhancement. Conversely, no significant relationship was found between throwing distance and lead foot/foul line distance, height of release, release angle, attitude angle, angle of attack, or stride length ($P > 0.05$). Javelin throwers exhibited enhanced performance with foul line distances ranging from 0.93 m to 2.97 m, release velocities averaging between 15.91 m/s and 24.05 m/s, release heights spanning 1.05 m to 1.95 m, and stride lengths from 0.45 m to 1.36 m. The Release Angle, Attitude Angle, and Angle of Attack ranged between 0.49 r to 0.67 r, 0.61 r to 0.83 r, and 0.02 r to 0.24 r respectively. Findings emphasize the critical importance of increasing release velocity to maximize throwing distance. The study recommends that SL JT should focus on improving technique to increase release velocity, this should be the key priority in training programs. Coaches should emphasize training methods that enhance release velocity to improve competitive javelin throwing performance.

Keywords: *kinematic variables, performance, releasing phase, techniques*