

Exercise Science

Hand Arm Path Length While Throwing

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The purpose of this study was to determine if a player's hand arm path length (HAPL) affects how quickly a softball travels from centerfield to home plate. 12 female softball players from a variety of positions ranging between outfield, infield, and catcher threw with maximal effort from centerfield to home plate. Two GoPro Hero4 cameras synchronously captured the release point of the throw as well as when the ball was caught at home plate; one that was placed 45 feet in front of home plate up the 3rd base line and the other camera was placed in center field 127 feet away from home plate. Video analysis was then completed with Kinovea (v 0.8.15). Variables included were launch angle, vertical velocity, horizontal velocity, resultant velocity, and total flight time. At this time, the sample was also split into short and long HAPL groups. Statistical difference between groups was evaluated with independent samples t tests and practical significance was evaluated with Cohen's d effect size estimates. Although not all variables tested were statistically different, practical differences were noted. The results showed that the longer the HAPL while throwing, the shorter total flight time that the ball took to reach its destination. Therefore, it is recommended that outfielders throw with a longer HAPL. Repeating the study with a larger sample size could prove more effective in showing that there is a statistical significance between the actual length of the HAPL in all variables measured while throwing.

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