The Overarm Throw Re-visited - Critical Components Contributing to Throwing for Accuracy and Throwing for Force in University Students

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The developmental sequences of the overhand throw (Roberton, 1977; Roberton and Halverson, 1984, Haywood et al, 1991) have been researched in terms of their influence on throwing for speed, particularly in childhood. In this pilot study the revised developmental sequence of Haywood and colleagues was utilised, with the addition of a new critical component, the follow-through, which may contribute to increased throw velocity.

The aim of this study was to determine whether differences exist in adults' upper extremity actions, when throwing for speed or accuracy. A total of 18 University students (8 females; 10 males) performed five throws for speed and five throws for accuracy. A radar gun recorded ball velocity in throws for speed, and an accuracy score, using a target fixed to a wall, was recorded in throws for accuracy. The developmental level for the critical components were determined through video analysis of each throw and a modal score of each component was amassed for each participant.

There was a significant difference (t (17 = 5.373, $p < 0.000$) between mean throw for speed (75.08 km/hr (SD = 22.86)) and mean throw for accuracy (57.71 km/hr (SD = 13.11)). Significant differences were also observed between genders, with males throwing faster in both the speed and accuracy conditions.

The results showed that forearm action accounted for 55.2% of variance in performance in throws for speed ($p < 0.05$), whereas the follow through accounted for 30.8% of variance in the throws for accuracy ($p < 0.05$).

Therefore, it was concluded that, in adult throwers, possessing a higher developmental level of forearm action will allow an individual to throw faster. Whilst throws for accuracy are dominated by the follow-through component.

This has implications from a coaching perspective, as it seems throwing for force and throwing for accuracy, may need to focus on developing higher levels of different critical components.