

PITCHING MECHANICS IN FEMALE YOUTH FASTPITCH SOFTBALL

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ABSTRACT

Background: Fastpitch softball is a popular sport for young females. However, data are limited describing youth pitching mechanics. Normative data describing pitching mechanics in the two youngest player pitch leagues are critical to gaining an improved understanding of proper mechanics in an attempt to establish injury prevention programs.

Purpose: The purpose of this study was to examine pitching mechanics in Little League softball pitchers and examine the relationship of these mechanics and participant anthropometrics to ball velocity.

Study Design: Cross-sectional.

Methods: Twenty-three youth softball pitchers (11.4 ± 1.5 years; 154.6 ± 10.5 cm; 51.0 ± 8.0 kg) participated. An electromagnetic tracking system was used to collect kinematic data for three fastpitch trials for strikes over a regulation distance to a catcher. The pitching motion was divided into three events: top of back swing, stride foot contact, and ball release.

Results: Youth who were older ($r=0.745$, $p < 0.001$) and taller ($r=0.591$, $p = 0.003$) achieved greater ball velocity. Trunk kinematics revealed that greater trunk flexion throughout the three throwing events of top of back swing ($r=0.429$, $p=0.041$), stride foot contact ($r=0.421$, $p=0.046$), and ball release ($r=0.475$, $p=0.022$) yielded greater ball velocity. Additionally, greater trunk rotation to the throwing arm side ($r=0.450$, $p=0.031$) at top of back swing and greater trunk lateral flexion to the glove side at ball release ($r=0.471$, $p=0.023$) resulted in greater ball velocity.

Conclusion: The significant relationships found between pitching mechanics and ball velocity only occurred at the trunk, which may highlight the importance of utilizing the trunk to propel the upper extremity in dynamic movements.

Level of Evidence: Diagnosis, Level 4.

Key Terms: Little League; Mechanics; Shoulder; Pitching

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