*TACSM Abstract*

# Peak Forces in the Landing and Push-off Foot Between Varying Fastpitch Softball Pitches

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ABSTRACT

Although softball and baseball tend to often be compared to each other, the skill of fastpitch softball pitching is drastically different. Limited studies done on softball pitching hinders the ability of athletes being able to maximize their performance. **PURPOSE**: To determine differences in peak force of the push-off, landing feet and ball velocity during different types of softball pitches (fastball, changeup, and curveball). **METHODS:** 5 NCAA Division III softball pitchers were all tested for the peak forces in their push-off and loading foot (Loadsol®, Novel, St. Paul, MN) as well as their ball velocity among a variation of pitches (fastball, changeup and curveball). Data was analyzed using JASP. A one-way repeated measures ANOVA was run. For any results showing statistically significant difference, a Holm post hoc test was also run. **RESULTS**: Peak force of the landing foot was higher for curveball and fastball in comparison to the change-up ($F(2,8) = 8.58$, $p = .010$). Loading rate for the landing foot showed no significant difference for each pitch thrown. Peak force and loading rate for the push-off foot between each pitch showed no significant difference. Ball velocity for the curveball and fastball was higher than the changeup ($F(2,8) = 83.8$, $p < .001$). **CONCLUSION**: Peak forces of the landing foot were significantly greater for the curveball and the fastball in comparison to the change-up due to the halting of the following through motion that stops the overall forward momentum of the pitcher's center of mass. An increased number of participants are needed for future studies to further analyze if loading rates of the landing are also significantly different between each pitch.