Longitudinal changes in performance outcome and shoulder configuration of baseball pitching: A preliminary report

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The purpose of this study was to examine longitudinal changes in selected performance outcome (speed and spin rate of pitched fastball) and the configurations of the shoulder complex in baseball pitching. In this presentation, we present preliminary results of a prospective cohort study undertaken over two-year period from 2011. Measurement sessions were conducted three times a year and seven times in total. Five collegiate baseball pitchers threw two fastballs from a pitching mound to a catcher, and the ball speed and spin rate were measured. The shoulder configuration exhibited at the beginning of the arm acceleration phase was determined using an electromagnetic tracking devise. A one-way repeated-measures ANOVA was conducted to determine the differences in the ball speed, spin rate, and nine variables representing the shoulder configuration among the seven measurement sessions. There was no significant difference in the ball speed and spin rate among the seven measurement sessions (p > 0.05). The glenohumeral-joint elevation angle was significantly increased by 11 ± 7° between 1st and 2nd sessions (p < 0.05), and maintained nearly constant from 2nd to 6th sessions. However, the shoulder joint elevation angle was not significantly increased between 1st and 2nd sessions (p > 0.05). These results indicate that the performance outcome was not improved in the two years of regular practices, although the glenohumeral joint mobility was improved, enabling better joint alignment for baseball pitching.