Selected Predictors of Hip/Ankle Mobility for Baseball Pitching Performance and Ball Velocity

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ABSTRACT

Hip and ankle mobility are important variables in ball velocity and pitching performance. Possible indices in hip mobility are internal rotation (IR) and external rotation (ER). An indication of ankle mobility is passive ankle dorsiflexion (PAD). This study examines the relationship of selected indices in hip and ankle mobility for collegiate baseball pitchers with the athlete's respective coaches' rating of pitching performance (CR) and ball velocity (BV). Ten collegiate baseball pitchers (age=20±2yrs, height=72.5±3.6in, weight=199.1±35lbs) volunteered for this study. Proceeding the assessment session, each athlete performed a series of static stretches. During assessment session height, weight, IR, ER, and PAD were recorded for each athlete. The day before the assessment session, BV was determined from the average velocity of the fasted three pitches from a bullpen session of 25 fastball readings (BV=87.7±4.6yrs.) utilizing a Stalker Pro radar gun. IR and ER were determined by the participant lying face down on assessment table with the knee flexed to 90 degrees. IR was determined by measuring the degrees of movement with a goniometer when the femur was passively moved into internal rotation and ER when the femur was passively moved into external rotation. PAD was conducted using a tape measure placed on the floor perpendicular to the wall.. With shoes removed, athletes placed the knee of the selected leg against the wall while sliding the heel away from the wall.Each indication was measured twice and further averaged for final result.The distance from the posterior side of the heel to the wall was measured and recorded for both legs, and normalized to the athletes' height.CR of the athletes' pitching performance was provided by the athlete's coach in response to a standardized question which quantified pitching performance using a 10pt scale (10=superior, 1=inferior). IR, ER, and PAD scores were correlated with CR using Spearman's (ρ) rank and BV using Pearson's rank (r). Moderate strength correlations existed between CR and non-dominant PAD at (ρ=0.36) and dominant IR at (ρ=0.33). Moderate strength correlations also existed between BV and non-dominant PAD at (r=0.46), dominant IR at (r=0.50) and non-dominant IR at (r=0.47). Non-dominant PAD potentially correlates to BV because the increased range of motion in the ankle may create more torque, leading to the finish in force coupling. Dominant IR may increase the load on the drive leg which leads to more torque and drive stride for an increase in BV. Non-dominant IR potentially creates more torque and rotational momentum. The correlating indices formulate an increase in torque and time for torque application. It appears that the same indices for CR are not as applicable. Pitching performance is dependent on various other factors.

Table 1. Deomffjsalfjklfjakl

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ing a Spearman's rank correlation (ρ) and BV using a Pearson's rank.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Height	10	69.00	79.50	72.5250	3.64853
Weight	10	169.00	280.00	199.1000	35.62599
Velocity	10	81.00	95.30	87.6800	4.56893
Valid N (listwise)	10				