Paper 17

Glenohumeral Passive Range Of Motion And The Correlation To Elbow Injuries In Professional Baseball Pitchers

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Objectives: The purpose of this study was to determine whether GIRD and/or bilateral difference in total rotational motion (TRM) of the glenohumeral joint (external rotation + internal rotation) correlated with elbow injuries in professional baseball pitchers.
Methods: This study was conducted over eight competitive seasons (2005-2012). Each year during spring training, the same examiners assessed passive range of motion (PROM) of both the dominant and non-dominant shoulders of professional pitchers using a bubble goniometer. In total, 505 examinations were conducted on 296 pitchers. Glenohumeral joint motion was assessed in supine with the arm at 90 degrees of abduction and in the plane of the scapula for ER and IR. During ER and IR ROM assessment, the scapula was stabilized per methods previously established. Elbow injuries and days missed due to injury were assessed and recorded by the medical staff of the team.
Results: Significant differences were noted during side-to-side comparisons ($p<0.0001$) within subjects. Amongst this cohort, there were 50 shoulder injuries in 38 players accounting for a total of 2294 days missed. GIRD did not correlate to elbow injuries ($p= 0.5507$). Pitchers with a deficit of more than 5 degrees in TRM between shoulders had a 2.3x higher risk of injury ($p = 0.0214$).
Conclusion: Based on these results, pitchers with bilateral differences in total rotational motion had a significant impact on the risk of elbow injuries. This information can help guide the clinician during the evaluation and progression of the professional baseball pitcher.