THROWING VELOCITY FOR BASEBALL PLAYERS IMPROVES WITH USE OF PLYOMETRIC OR BALLISTIC RESISTANCE TRAINING.
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Context: Improvements in throwing velocity have been linked to success in baseball. Restoration of throwing velocity following a shoulder or elbow injury is crucial in the rehabilitation process. Objective: The purpose of the study was to evaluate the effect of a plyometric or ballistic resistance training program on throwing velocity. Design: The design of the study was a critically appraised topic. We conducted a search of the literature using a PICO question to guide the search. The PICO-based search defined the following parameters: Population: baseball; Intervention: (plyometric OR ballistic resistance) AND shoulder; Comparison: plyometric training protocol AND control; Outcomes: baseball-throwing velocity OR (baseball AND velocity). The literature was searched for articles with a level of evidence of 3 or higher. The databases searched were PubMed, ProQuest, Sport Discus, PEDro database, and Google Scholar. Additional articles were hand searched using the reference lists in previously obtained articles. Inclusion criteria consisted of English language articles within the last ten years (2004-2014) utilizing human subjects. Exclusion criteria were any population older than college age, a mixed sex or age pool, articles utilizing weight training unless compared to plyometric training, and examination of other throwing sports besides baseball. Settings: Our study was a review of field-based studies. Participant: A total of 126 male baseball players participated in the selected three articles. All players were within a range of 11-21 years of age and participated on baseball teams. Intervention: The intervention was a plyometric or ballistic resistance training protocol that utilized the stretch shortening cycle for the upper extremity. The programs utilized a duration of four to eight weeks. Main Outcome Measures: Pre and post testing measures of throwing velocity served as the outcome variable of interest (dependent variable). Additionally, questionnaires speaking to overall satisfaction with the program were recorded during two of the investigations. Results: Two high quality randomized controlled trials and one non-randomized controlled trial were identified. All three studies showed a statistically significant increase in throwing velocity after the intervention ($P<.05$). The increase in throwing velocity after the intervention ranged from 1.5-2.2 mph when compared to the control groups. For all participants across the studies, only one of the subjects expressed displeasure with the training program on the questionnaires. Conclusion: A plyometric training protocol can significantly increase throwing velocity in a baseball player. Indeed, even a simple four-week training program can increase throwing velocity, which allows for practical implementation into a rehabilitation program for a shoulder or elbow injury. Word Count: 408