

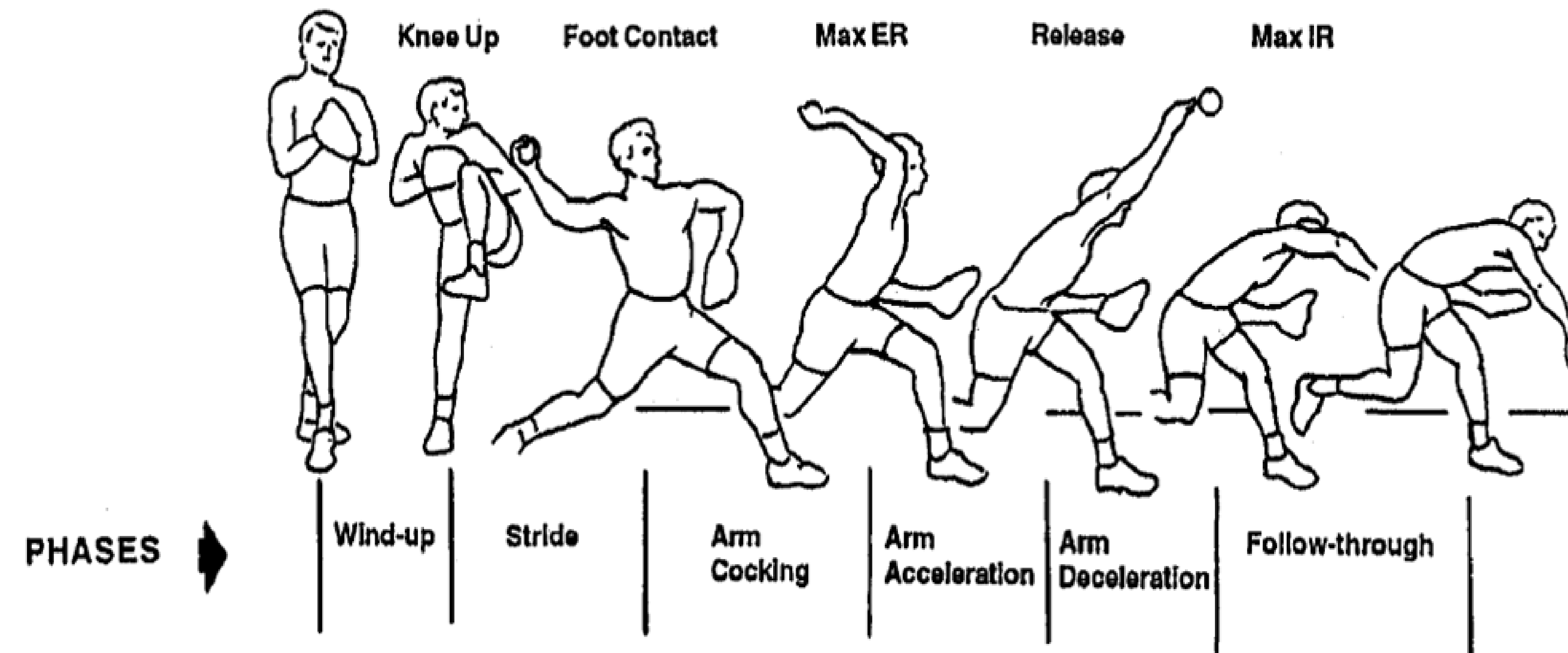
Abstract

According to a survey completed by the National Federation of State High School Associations, baseball is the third most popular boys sport played. In the 2012-2013 year season, 15,632 schools played high school baseball across America. These schools were comprised of 474,791 student athletes. A recent study reports that 63.3% of injuries in high school baseball are to the upper extremity. (Shanley, Rauh, Michener, Ellenbecker, 2011). Bonza, Fields, Yard, and Comstock (2009) reported that 17.7% of high school baseball players injure their shoulders. This is a greatest percentage of injuries among baseball players. It is for this reason that shoulder injury prevention is of the upmost importance for baseball pitchers. This following scholarly paper provides a review of the phases of the baseball pitch including the structural and muscular requirements of each phase. The paper also reviews current literature that can be used to produce an evidenced based shoulder strength and conditioning program that may be implemented by institutions with limited financial resources, limited facilities, and without a qualified strength and conditioning professional. The case report describes how this program was implemented as part of the overall strength and conditioning program used during the fall baseball season at Gordon State College in Barnesville, GA. The development of the shoulder strength and condition program took into account current research as well as the financial and equipment limitations, availability of qualified strength and conditioning professionals, and training time allotted for the strength and conditioning of National Junior College Athletic Association student athletes.

Case Report

The Men's Baseball Team at Gordon State College in Barnesville, GA was chosen as the subject for this case report. The author has personal connections with the staff. The author was able to discuss with the staff their strength and conditioning program, current literature on the subject, and then later in the year the outcomes achieved this year.

Phases of the Baseball Pitch



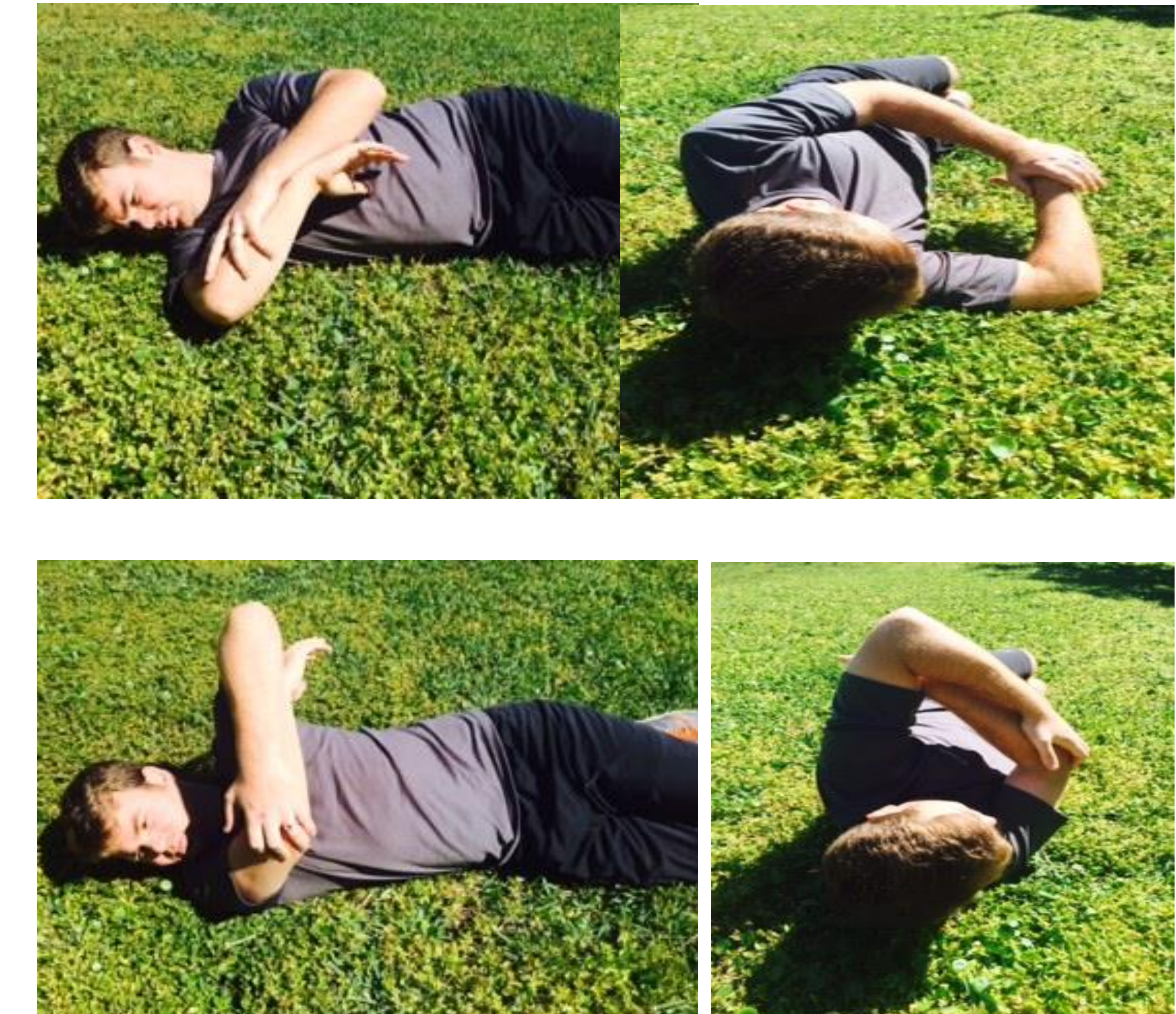
8 Week Preseason Strengthening and Plyometric Program

| Exercise | Weeks 1-2 | Weeks 3-5 | Weeks 6-8 |
|------------------------------------|----------------------------|----------------------------|----------------------------|
| Side-lying External Rotation | 3 sets of 15 repetitions | 3 sets of 10 repetitions | 3 sets of 6 repetitions |
| Prone Ys- Thumbs Up | 3 sets of 15 repetitions | * | * |
| Prone Is | 3 sets of 15 repetitions | * | * |
| Prone Ts- Thumbs Up | 3 sets of 15 repetitions | * | * |
| Prone Ts- Thumbs Down | 3 sets of 15 repetitions | * | * |
| Scapular Pushups | 3 sets of 15 repetitions | 3 sets of 10 repetitions | 3 sets of 6 repetitions |
| Supine Eccentric Internal Rotation | 3 sets of 15 repetitions | 3 sets of 10 repetitions | 3 sets of 6 repetitions |
| Rhythmic Stabilization | 3 sets of 30 second trials | 3 sets of 30 second trials | 3 sets of 30 second trials |

| Exercise | Weeks 1-2 | Weeks 3-5 | Weeks 6-8 |
|---|--------------------------|--------------------------|--------------------------|
| Band External Rotation at 90/90 | 3 sets of 10 repetitions | 3 sets of 15 repetitions | 3 sets of 20 repetitions |
| Band Internal Rotation 90/90 | 3 sets of 10 repetitions | 3 sets of 15 repetitions | 3 sets of 20 repetitions |
| Soccer Throw- 6lb medicine ball | 3 sets of 10 repetitions | 3 sets of 15 repetitions | 3 sets of 20 repetitions |
| 90/90 Side Throw | 3 sets of 10 repetitions | 3 sets of 15 repetitions | 3 sets of 20 repetitions |
| Deceleration Baseball Throw- 2lb medicine ball progressed to football | 3 sets of 10 repetitions | 3 sets of 15 repetitions | 3 sets of 20 repetitions |
| Baseball Throw- 2 lb medicine ball | 3 sets of 10 repetitions | 3 sets of 15 repetitions | 3 sets of 20 repetitions |

* These exercises were replaced by the low row after 2 weeks due to time constraints of NJCAA student athlete's schedule

Modified Sleeper and Cross Body Stretch



Modification was made to the sleeper stretch by having the athlete posteriorly rotate 20°-30° and elevate the shoulder to 90°. The cross body stretch was modified to be performed in side-lying with a posterior rotation of the trunk to 20°-30° and the athlete's forearms aligned with the throwing arm below the non-throwing arm. These modifications allow for stabilization of the scapula and a more specific stretch to the targeted posterior shoulder tissues. (Wilk, Hooks, Macirna, 2013)

Outcomes

Specific adjustments to the strength and conditioning program were made based on the preferences and resources of the Gordon State College baseball coaching staff. To this point in the spring season, the coaching staff reports no significant upper extremity injuries, decreased reports of arm pain/fatigue, and increased velocity in their pitching staff compared to last year.