

Southwest Athletic Trainers' Association Free Communications Abstract Presentations

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Individual Goal and Velocity Based Throwing Program for Collegiate Baseball Pitchers with Medial Elbow Injuries.

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Background: A 22-year-old male collegiate baseball pitcher experienced sudden pain in the medial left elbow following feeling a pop when pitching. The pitcher was removed from the competition and was evaluated with a point-of-care ultrasound at the conclusion of the competition. Ultrasound revealed an intact ulnar collateral ligament (UCL) and no edema. **Differential Diagnosis:** UCL sprain, Wrist flexor strain **Treatment:** The patient was referred to a primary care sports medicine physician for further evaluation. The physician found no tenderness or laxity at the UCL and ordered an MRI arthrogram for further diagnostic information. MRI revealed a grade II flexor digitorum superficialis strain. After consultation with the physician and athletic trainer, a return-to-play protocol involving a platelet-rich plasma (PRP) injection, therapeutic exercise, individual goal, and velocity-based interval throwing program was agreed upon. 20 days following injury, the patient received an ultrasound-guided PRP injection at the site of injury. 24 days following injury, the patient achieved a full range of motion after the injection. As such, the patient began isometric exercises. 26 days after injury, the patient began resistance exercise for the forearm extensors, flexors, pronators, supinators, and finger intrinsics with blood flow restriction. Prior to beginning the interval throwing program, the pitcher met with the athletic trainer to discuss individualized goals and milestones with the pitcher's input being taken into account. 31 days after injury, the patient began the individual goal and velocity-based throwing program shown in Table 1. 52 days after injury, the patient was able to successfully return to competitive pitching without complication. **Uniqueness:** While the flexor strains at the elbow are common injuries among baseball pitchers, the majority of throwing programs are distance based rather than velocity based. Additionally, many of these programs have been shown in previous research to be generic, and even arbitrary in some cases. This case details the use of an individual goal and velocity-based interval throwing program to progress a pitcher back to competition. By adding in individualized goals set by the patient, there was an opportunity to give the patient a greater sense of agency in his return to play process. Additionally, the velocity-based aspect of the program allowed objective data to dictate progression to the next phase of the throwing program. **Conclusions:** When attempting to return of an overhead throwing athlete to participation, it is important to incorporate individualized goals and objective measures of performance. Doing so has the potential to increase patient compliance and provides a more measurable means of progressing to the next phase of return to play. As diligent clinicians, athletic trainers should assess and reassess any return-to-play protocol a patient is completing to ensure optimal outcomes.

Table 1. Individual Goal and Velocity Based Throwing Program

Timeframe	Throws	Percentage of Max Velocity (84 mph)	Target Velocity
Day 1-3	2x20	70%	59-61 mph
Day 4	1x20	70%	59-61 mph
Day 5	2x20 1x10	70% 75%	59-61 mph 63-65 mph
Day 6 & 7	2x20	75%	63-65 mph
Day 7	Rest	Rest	Rest
Day 8 & 9	2x20 1x10	75% 85%	63-65 mph 72-74 mph
Day 10	1x20	85%	72-74 mph
Day 11	Preparation	Preparation	Preparation
Day 12	1x20	80% Bullpen (89 mph max)	71-83 mph
Day 13	Recovery	Recovery	Recovery
Day 14	Rest	Rest	Rest
Day 15 & 16	2x20	90%	76-78 mph
Day 17	Preparation	Preparation	Preparation
Day 18	1x20	90% Bullpen (89 mph max)	80-82 mph
Day 19	Recovery	Recovery	Recovery
Day 20	Rest	Rest	Rest
Day 22	Preparation	Preparation	Preparation
Day 23	Competition	Competition	Competition
Day 33 & 34	3x20	90%	81-87 mph