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Ascension

MASTERING THE THROWING PROGRESSION

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With Spring right around the corner, many of our athletes are getting excited to jump back into throwing sports. As an Athletic Trainer who worked primarily Division I baseball, the offseason and preseason were where much of my time was spent evaluating and planning throwing programs for my team. As a former collegiate catcher, this is the time of the year that I wish I had paid more attention to, armed with the information I know now. The Winter months can either set up a thrower for failure or help lead them to success. A mistake that I made as a player, and that I continue to see made all too often, is improper throwing preparation for the season ahead. Luckily, research has come a long way in matching throwing programs to biological adaptations, and if you consider the individual factors that play a part in the readiness of each thrower, establishing a proper throwing progression is simple.

First, let's establish a baseline. Dr. Keith Meister, Head Team Physician for the Texas Rangers, has a handful of readily available throwing progressions for multiple sports and positions, whether the athlete is recovering from an injury or completely healthy.4 They are all available at tmisportsmed.org under "rehabilitation protocols." These range anywhere from 4-8 weeks, and pitchers have a separate 4-week flat ground and mound program for a total of 4-12 weeks. The rest of the decision-making process is based on these factors: time away from throwing, time until competition, and expected in-season throwing demands.

Take the necessary time away from throwing.

Collectively, Major League Baseball and one of the nation's most respected surgeons for professional athletes, Dr. James Andrews, have established guidelines that state that pitchers 15-18 years old should take 2-3 continuous months off throwing.1 The reason for this timeline is based on the recovery rates of specific tissues after the chronic stress of throwing for 9-10 months. If the athlete has had the opportunity to take that full time away from throwing, I would recommend that the full 8-week protocol is followed in order to give the athlete's arm enough time to acclimate to consistent throwing without shocking the soft tissue.

This is an alarming amount of time to take off for more competitive players, especially given how many showcases are available throughout the year. However, to quote Dr. Andrews, "Year-round baseball is number one" as far as risks factors for eventually requiring Tommy John surgery from a torn ulnar collateral ligament (UCL).2

On the other end of the spectrum, if a player has had no time off at all during the year, taking time completely off right before competition would be inadvisable. This quick stop-and-go nature is a common pattern for injury. Instead of completely shutting down throwing a month before competition and going into game-week cold, the athlete should work back from the end of the 4 week program (or 4 week mound progression for pitchers), leaving themselves as much time as possible to ramp into their first competition. As an example, if they have 3 weeks to take off before beginning games, they should start at "Week 2" in the 4-week program or mound progression, or "Week 6" in the 8-week program. After the season, they should shut down from throwing for the recommended 2-3 months, then begin a full return to throwing progression.

Make the timeline make sense.

Along with the off-season time spent away from throwing, this plays one of the largest roles in planning a throwing progression. The player should use as slow and steady of a ramp-up time as possible to avoid overloading tissues. Going too hard, too quickly is a sure way to wind up dealing with issues through the bulk of the year. For this we evaluate the acute to chronic workload ratio, essentially, how much more is the thrower doing now compared to what they're used to. Challenging the arm takes time, and that time is well spent making sure that the arm remains resilient throughout the rest of the competitive season. This is why a proper throwing progression takes a month at the very least. Any quicker than 4 weeks, and the athlete will have a barking arm at some point during the season, usually towards the front end, because their acute to chronic workload ratio is too high. Find the plan that will work with the timeline and build in an extra week of time to prepare in case the schedule goes awry.

Know the expected in-season throwing demands.

The pre-season throwing progression should match the demands of the position. This is why Dr. Meister's interval throwing programs max out at 120 feet. It is rare for a player to need to throw a ball greater than 120 feet during a game, and there are biomechanical changes that put greater torque on the elbow and shoulder, placing the athlete at an unnecessary risk, when the ball is launched on a high arc.3 In the case of outfielders and catchers, intensity can be built into the program by integrating "pulldowns" in the last handful of throws at 120ft. This incorporates using body momentum (aka crow hop) to get more effort behind a near max-effort throw, but on a line, replicating in-game demands much more closely than long toss. A good idea is to mix in a pulldown every 4-5 throws for the last 15-20 throws at 120 feet, or leave 3-4 at the end with at least a minute rest in between throws.

Another demand to be knowledgeable of is not intensity, but volume. Usually, practice conditions will demand an even greater workload on an athlete's arm than any game ever could, especially for position players. It is often best practice to complete the progression before beginning the practice period so they may be ready for infield drills that include throwing. Even more important than this, each coach should be mindful of the number of throws demanded out of each position during practice. It is common, even usual, to see collegiate and professional programs go no-throw on infield drills and focus on footwork. When you see that throwing volume has come to a point in the practice when throwing is no longer arm conditioning, but just a necessary action to get the ball where it needs to go, it's time to put a bucket out by each position, have them focus on footwork, and drop the ball into the bucket.

Be intentional.

When looking at the throwing progression, it's easy to see a low volume, low intensity day, and write off the day of throwing as a sort of "nothing" day, when it is far from that. The earlier stages of a throwing progression should be utilized to work on mechanics and targeting. A thrower can use the time to feel out body positioning, work on drills, or even make a game out of the progression. Games can be a percentage of throws being chest hits, a game of "21", or working on quadrants by throwing the ball to either shoulder or either hip.

Using the advice of the top minds in throwing, and those that are closest to throwing injuries at the highest level, any high school athlete can be set up for success in staying healthy and playing to their skill level.

References

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