

"Basic Understanding of Pitching Mechanics"

Sean Cashman

Belmont Sports Group

sean@belmontsportsgroup.com

c: 720.450.0946

There is no cookie cutter way to pitch. Every pitchers' mechanics are different. Each Person has their own physical limitations but we will require certain attributes in your motion. For the better part of the last decade, I have been dedicated to finding solutions to pitching injuries. On the field, in the lab, and face to face with the world's best orthopedics and biomechanics. Biomechanically and scientifically manipulating mechanics will not only drastically improve your performance but essentially eliminate pitching injuries (not caused by overuse). I have prepared the following brief discussion points on each part of the delivery.

Delivery Techniques

Wind-Up Position (Set UP)

- Body in an upright relaxed position, feet slightly spread, torso upright and shoulders relaxed. The more bend in the waist the more tension there will be in the body.
- **Feet positioned on either extreme of the rubber**
 - o Throwing arm side will create deception and outside edge angle on breaking pitches.
GOOD FOR RELIEVERS OR PITCHERS WITH PLUS BREAKING BALL
 - o Glove side will create straighter arm path and release point closer to home plate. IDEAL FOR PLUS VELOCITY GUYS, OR PITCHERS WITH ARM SIDE RUN

Preliminary Movement

- A short step in any direction (besides forward) occurs as the pivot foot is moved into position in front of and parallel to the pitching rubber. Make sure foot is parallel and not in any other angle.

Gather to Load

- Hands can either stay chest level through load, or have movement above head or down to the belt. Comfort factor is important.
- The stride leg should be lifted by using the quadriceps. The calf and the foot should remain limp during the leg lift.
- **The hands should get to chest height at the peak of the leg lift.**
- Head Position should remain stable. Head movement created by excessive hip and shoulder rotation may cause control problems.

Arm stroke is the path the throwing arm and hand travel from the time the pitchers' hands separate to the end point of the arm's deceleration after release. Arm stroke is developed at an early stage of pitchers' development. It is a formed process of muscle memory and is very difficult to correct if it is unorthodox. Thus, if there is a flaw in the motion, an easier fix will be with the stride or hand separation.

Separation and Stride

Hands

- Hands will separate at the back hip after forward movement has taken place
- The back of the glove should face the catcher
- The glove should be higher than the lead elbow.
- The lead shoulder should move directly toward the catcher
- The throwing arm should move down, back and up in a loose matter. Arm stroke should move towards 2nd base.
- The throwing hand should move along this route palm down

Legs

- The stride should begin with the back side moving directly and firmly at the catcher's glove
- This movement toward the target should be initiated by the back side, since the back foot is the only part of the body attached to the ground.
- During the stride legs path towards home plate, our stride angle (or hip abduction angle) will be 90 degrees or larger. Creating more torque and hip rotational velocity. Hip rotational velocity is directly correlated with ball pitch speed velocity.
- Stride path should be in the general vicinity of "heel to heel"

Foot Strike / Late Cocking Phase

- Late cocking phase is the major point of the pitching motion where the greatest energy transfer occurs and also where the pitching arm is under the most amount of stress. This phases is where the shoulder/arm/ball is cocked and loaded precisely when the stride foot hits the ground. At this exact time, all the kinetic and potential energy the body created by proper use of legs/core/torque transfers up to the bodies eccentric force (arm). If the arm is not loaded or loaded to early, the pitchers' throwing arm will undertake an unbearable amount of stress.
- **When our stride foot hits the ground, our throwing arm will be loaded at an angle no more then 5 degrees plus or minus 90 degrees.**
- Also at foot strike, our back hip will be all the way through. Belt buckle will be facing the catcher and shoelaces facing the ground. Our shoulders will be closed and square to 3rd Base (RHP) or 1st Base (LHP)
- Our landing foot will also land slightly closed or directly at catcher, if it lands open the energy will not properly be dispersed to the arm Landing on outside of foot will also cause the pitcher to fall off the pitch with his head/upper body, thus creating inconsistent release points.

Acceleration

- The pivot foot leaves the rubber, with drive foot shoelaces facing the ground, and body weight is moved from the flexed back side to the flexed front leg.
- Acting together, the throwing elbow leads the throwing hand toward the plate.
- As the throwing arm moves toward release, the lead arm elbow assumes while passing through its arm stroke.
- The rotation for this acceleration toward release is created by having the pitcher's head directly over the flexed landing leg and knee. This is critical technique that helps the pitcher achieve maximum leverage.

Release

- Release the ball with proper and full extension in front of the body. The more upright or horizontally extended the ball is at release, the chances for lower velocities and arm fatigue increases.
- Biomechanically our ideal release point is 90 degrees perpendicular to our shoulder axis. But, since overhead throwing is biologically unorthodox, this movement is physically impossible.
- Back foot will stay connected through release, assuring proper kinetic chain or power transfer to our arm.
- Glove and Head will stay stabilized over front knee through release.

When working with mechanics on video, always address these 8 points:

- 1) Initial Set up
- 2) Leg Lift
- 3) Load- Where are the hands? Are hips/shoulders properly loaded?
- 4) Hand Separation at back hip.
- 5) Stride. Is hip abduction angle greater than 90 degrees? Is stride in line?
- 6) Foot Strike. Is the ball cocked at 90 degrees? Are shoulders square? Are hips open?
- 7) Acceleration. Is elbow leading the arm?
- 8) Release. Is release out in front of the body?

There are several specific drills to address each of these areas of the mechanics. Due to time restraints we will not be able to dive into them.

A well informed pitcher has a much greater chance of throwing safely at his/her top level.