

## **Pitching - Critical Hand Positions**

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The purpose of this document is to define the relationship between hand and ball when pitching. Ball spin is extremely important for speed, control and pitch movement. But, that spin must be generated by the larger muscles, not wrist flip. In both overhand and underhand pitching, hand movement rotating the ball generates ball spin, but that rotation happens as we extend (before we relax (the arm and hand) like a whip upon release). When combined with an elbow rotation, the large muscles generate the arm extension, ball speed and spin. It is just like hitting where we get the work done early so the whip can happen. With Figure 8 the elbow goes from out-to-in, and from in-to-out with Windmill. The relationship between hand, ball and body is critical in developing speed, control, and pitch movement.

### **The Down-stroke (generally down from start to finish)**

The first step in understanding any movement is to examine or picture its start and finish: a strategic or relational view of the situation. Like making war on a map, we want to know the relationships between things: where we are at the start, where we want to finish, and what is the general direction from start to finish. In all throwing motions with arm extension (throwing a ball or bat) rotation generates spin and speed. The general direction of that rotation is down. Use the big muscles in the body to move the arm down while rotating the elbow in (Figure 8 motion) or out (Windmill). In other words, snap the arm down with that rotation and extension, then relax. Before we start that rotation many non-critical things can happen. They are just personal preference. But in both hitting and pitching, critical things happen on the down stroke. To understand ball spin we will examine the beginning and end of that down stroke. By the way, because spin accelerates the whip of the bat when we extend our arms, we also spin the bat the same way. They are both throwing motions using extension and elbow rotation. Here, we will examine the beginning and end of that down stroke in pitching.

### **The start of the Down-Stroke is critical**

To define the relationship between hand and ball when pitching, we will examine the start, finish, and general direction of the down-stroke. In all throwing motions we want to take advantage of gravity, so we will identify the pitching motion start as the part where we start using gravity, and the end will be at the bottom of that motion. Between those two points hand movement spins the ball, and it is very important that effort (spinning and extending effort) be finished so a relaxed arm can whip the ball without messing up either the speed or spin.

### **The end of the Down-Stroke is critical**

For maximum spin, the position of the hand in relation to the ball and body depends on whether we are pitching Windmill or Figure 8. With Figure 8 we are pulling down from inside the ball (at the top) to outside the ball at the end of the down-stroke. With the Figure 8 the down motion comes after the namesake “figure 8” rotation (on the

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vertical axis) that puts the hand on the inside of the ball. So, pull inside-out with a Figure 8, and push outside-in with the Windmill. With the Windmill we are pushing while extending the arm. With it we want to end up (at the bottom) on the inside of the ball. So we get the most power and spin if we start down on the outside. Push outside in. With a Windmill it is critical we end up on the inside of the ball at the end of the Down-stroke. Because of the extra rotation, the Figure 8 Down-stroke is shorter.

### Hand Position and Spin Direction

Hand position is easy to see, so we do not want our hand position at the end of the down stroke to also indicate the direction of spin. Like gear teeth in a transmission, once the ball is rotating the fingers can easily redirect ball spin direction. For example: one way to turn a drop to a rise using the same Windmill motion (elbow moving from in to out on the down stroke, hand moving from out to in) is to tuck the index finger like a gear tooth to change the spin direction by cutting under the ball off the index finger as the hand moves inside. A Figure 8 example: the way to turn a Figure 8 rise into a tip drop (from that same hand position) is very subtle. Figure 8 is a low release low profile pitching motion. We want the low rise to appear to jump into the strike zone late and the low drop to look like a rise before it drops very late. For both the low rise and the low drop we want the critical hand positions to be from the same place for maximum rotating extension. We also want to control the speed of the ball with our thumb, releasing with our thumb still on the ball for change-ups and releasing with your hand more open and our thumb away from the ball on fast balls. To turn that low rise into a tip-drop has something to do with the way we open our hand after that critical hand position at the bottom of the down stroke. Since movements are hard to describe, all I can say is the tip drop comes a little straighter off the finger tips than the low rise.

### Summary: Pitching – Critical Hand Positions

The purpose of this document is to define the relationship between hand and ball when pitching. Ball spin is extremely important for speed, control and pitch movement. But, that spin must be generated by the larger muscles, not wrist flip. In both overhand and underhand pitching, hand movement rotating the ball generates ball spin, but that rotation happens as we extend (before we relax the arm and hand like a whip upon release). When combined with an elbow rotation, the large muscles generate the arm extension, ball speed and spin. It is just like hitting where we get the work done early so the whip can happen. For both hitting a pitching, with Figure 8 the elbow goes from-out-to-in, and from-in-to-out with Windmill. The relationship between hand, ball and body is critical in developing speed, control, and pitch movement. Hand position is easy to see, so we do not want our hand position to also indicate the direction of spin. Like working a yoyo, a relaxed hand can direct that spin up down or sideways after the down stroke. But with a Windmill it is critical we end up on the inside of the ball at the end of the Down-stroke, and with a Figure 8 it is critical for the hand to end up releasing energy from the outside. They are opposites: Pull inside-out and Push outside-in.