

10 Ways to Increase Velocity

November 24, 2008

New study out of the Journal of Elbow and Shoulder Surgery:

[http://www.jshoulderelbow.org/article/S1058-2746\(08\)00426-6/abstract](http://www.jshoulderelbow.org/article/S1058-2746(08)00426-6/abstract)

Wener SL. *Relationships between ball velocity and throwing mechanics in collegiate baseball pitchers.* J Shoulder Elbow Surg 2008

looked at 54 collegiate pitchers and found certain mechanics that directly related to velocity.

They then made the following recommendations **in bold** (followed by my comment) to help increase velocity:

(1) Larger Body Mass

This is just a matter of gaining weight through both a growth spurts and eating 500 extra calories per day to gain 1-2 lbs per week

(2) A shorter time from Foot Strike (left picture) to Maximum External Rotation of the throwing shoulder (right picture)



This is about quickness ("Be Quick But Don't Hurry") and rotational strength (Rotation + Extension = Power).

The pitchers who threw the hardest went from Foot Strike to Maximum External Rotation in **less than 3-tenths of a second** (0.244 seconds). That's quick!!!!

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(3) Increased knee flexion at Foot Strike

- ✓ The more the front knee was bent at Foot Strike, the higher the velocity.
- ✓ Again, **we come back "being quick with the hips" to get more weight onto the front leg** at Foot Strike.
- ✓ The average front knee was bent to 48 degrees at Foot Strike



(4) Increased elbow flexion at Foot Strike

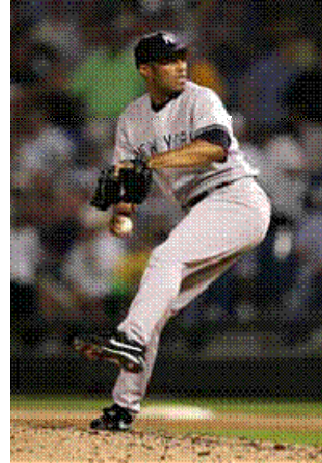
- ✓ The more the throwing elbow was bent at foot strike, the higher the velocity. The average throwing elbow was bent to almost 90 degrees.



(5) Keep the head behind the hips longer.

- ✓ Keeping the head behind the hips longer (which is why we lead with the hips with no balance point during the leg kick) also produces less stress on the shoulder ([click here for that study](#)):

(Werner SL. Relationships between throwing mechanics and shoulder distraction in collegiate baseball pitchers. Journal of Shoulder and Elbow Surgery 2008; 16(1): 37-42)



(6) Increased maximum shoulder external rotation;

- ✓ Stressing flexibility, the further the throwing arm rotated back, the higher the velocity because of the increased stored energy (think of a slingshot).
- ✓ The pitchers who threw the hardest had an external rotation of 160 degrees (slightly less than the picture below of Nolan Ryan):



**(7) Increased elbow flexion velocity AND
(8) Increased upper trunk rotation velocity**

- ✓ Both of these again deal with learning how to be quicker with your movement (As I say, "Controlled Explosion") to Ball Release and using trunk rotation to build velocity (Rotation + Extension = Power)

(9) Increased knee flexion at Ball Release

- ✓ Pitchers who threw the ball hardest had their front knee bent to nearly 60 degrees at Ball Release. So their front knees went from 48 degrees bent at Foot Strike to 60 degrees at Ball Release.

(10) increased forward trunk tilt at Ball Release

- ✓ If you'll notice, the flexing occurs at the hips, NOT the back...the back stays straight through Ball Release.
- ✓ The researchers felt that extending the front knee at Ball Release (from 48 to 68 degrees) helped increase the forward tilt of the upper body at Ball Release:

