AN ANALYSIS OF CHRIS CARPENTER'S PITCHING MOTION & MECHANICS

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General Comments About Chris Carpenter

- 6' 6"
- 230 lbs.
- Pitches...
  - 92-93 mile per hour fastball (2-seam and 4-seam).
  - Sweeping curve ball.
  - Cutter.
  - Changeup.
- Injuries...
  - Torn labrum 2002.

    Missed 2003 season due to lingering problems from 2002 surgery.
  - Right biceps injury led him to miss postseason in 2004.

    Nerve irritation (stretched nerve) near right biceps muscle led to weakness in right biceps.
    - May be related to problem decelerating arm.
  - Bone spur in elbow.

Comments About Chris Carpenter's Pitching Motion And Mechanics

- Lunge-style pitcher.
- Doesn't show the ball to CF.
- Carpenter appears to start rotating his shoulders before his arm is up and in the high cocked position, which may explain his shoulder problems.
  - This will worsen his Reverse Pitching Forearm Bounce and may lead to rotator cuff problems.
  - Other pros who also appear to do this and have also experienced shoulder problems include...

    Ted Lilly.

    Josh Beckett.

    Billy Wagner.

    Robb Nen.

    Roger Clemens (earlier in his career and to a lesser extent).
- Medium-length swing of pitching arm.
  - Starts to flex elbow before pitching arm is fully extended.

    Might be related to shoulder problems.

Year	Ag	Tm	Lg	W	L	G	GS	CG	SHO	GF	SV	IP	H	R	ER	HR	BB	SO	HBP	WP	BFP	ERA	*lgERA	*ERA+
1997	22	TOR	AL	3	7	14	13	1	1	1	0	81.3	108	55	46	7	37	55	2	7	374	5.09	4.62	91
1998	23	TOR	AL	12	7	33	24	1	1	4	0	175.0	177	97	85	18	61	136	5	5	742	4.37	4.66	106
1999	24	TOR	AL	9	8	24	24	4	1	0	0	150.0	177	81	73	16	48	106	3	9	663	4.38	4.92	112
2000	25	TOR	AL	10	12	34	27	2	0	1	0	175.3	204	130	122	30	83	113	5	3	795	6.26	4.97	79
2001	26	TOR	AL	11	11	34	34	3	2	0	0	215.7	229	112	98	29	75	157	16	5	930	4.09	4.75	116
2002	27	TOR	AL	4	5	13	13	1	0	0	0	73.3	89	45	43	11	27	45	4	3	327	5.28	4.47	85
2004	29	STL	NL	15	5	28	28	1	0	0	0	182.0	169	75	70	24	38	152	8	4	746	3.46	4.18	121
2005	30	STL	NL	21	5	33	33	7	4	0	0	241.7	204	82	76	18	51	213	3	5	953	2.83	4.27	151
8 Yr		WL%	.586	85	60	213	196	20	9	6	0	1294.3	1357	677	613	153	420	977	46	41	5530	4.26	4.59	108
162 Game Avg				14	9	35	32	3	1	0	0	215.0	225	112	101	25	69	162	7	6	919	4.26	4.59	108

1. 1 

2. 1 

3. 1 

4. 1 

5. 1 
2 

6. 1 
2 
3 
4 

When preparing to go to the plate, Carpenter undergoes a fairly large amount of reverse-rotation of his hips and shoulders. However, the ball does not go behind the acromial plane. As with good golfers, his shoulders are reverse-rotated more than are his hips. This pre-stretches the muscles of the legs, hips, and torso and will enable him to rotate his shoulders quickly. The only problem is that this adds horizontal movement to his motion and lowers his release point.

7. 1 

8. 1 

9. 1  2 

10. 1 

11. 1  2 

12. 1  2 

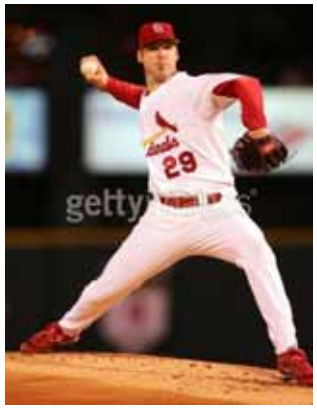
13. 1 

14. 1 

15. 1 

16. 1  2 

One of my pet peeves is coaches who say that pitchers (and throwers) should show the ball to Center Field. I don't know why they say this and all I can say is that Chris Carpenter doesn't.

17. 1  2 

GLOVE-SIDE FOOT PLANTED: From the above pictures, you can see that Chris Carpenter is a lunge-style pitcher. At this moment in his delivery that his glove-side foot is planted on the ground, his pitching forearm is not yet up and in the Ready position. To give his arm time to get up to the Ready position, Carpenter will lunge forward toward his glove-side knee — in the same way that a fencer lunges toward their opponent — before starting to rotate his shoulders. He will not start rotating his shoulders until he has bent his knee approximately 100 degrees.

While it's hard to argue with the success that Carpenter has experienced — he did won the NL Cy Young in 2005 — lunging can cause two potential problems. First, lunging lowers the release point. This flattens out the plane of the pitch and make you more vulnerable to giving up hard-hit balls. Second, lunging will tend to limit hip rotation. Carpenter's injuries may be related to the fact that he cannot get as much force out of the rotation of his hips and shoulders and instead has to throw more with his arm.

I also wonder if the fact that Carpenter's arm is not yet up and ready at the moment that his glove-side foot is planted could contribute to his injuries. It looks to me like he does not start rotating his shoulders until sequence 22, but if he started to rotate his shoulders — even slightly — at the moment that his glove-side foot was planted and before his arm was up and ready, then he would experience a worse than usual Reverse Pitching Forearm Bounce. This may have something to do with Carpenter's shoulder injuries.

18. 1 

19. 1 

2 

20. 1 

2 

3 

21. 1  2 

22. 1  2 

23. 1  2 

SHOULDERS STARTING TO TURN: Elbow is bent more than 90 degrees, which may have something to do with Carpenter's problems with his right bicep. As with most power pitchers, when Chris Carpenter rotates, the rotation of his hips leads the rotation of his shoulders (in picture 23.1 his belt buckle is pointing at home plate while his shoulders have only just started to turn).

24. 1  2  3  4 

25. 1 

26. 1  2  3 

27. 1 

28. 1 

29. 1  2 

30. 1  2  3  4  5 

STARTING TO PRONATE: In the above pictures, you can see that Carpenter is just starting to pronate his pitching-arm-side wrist. Unfortunately, he is doing this only after his elbow is almost fully extended. While this should protect his olecranon from slamming into its fossa, his Pronator Teres will not be able to take some of the load off of his UCL.

31. 1  2  3 

32. 1  2  3  4  5 

RELEASE POINT: His knee is flexed slightly when releasing the ball. In most of these pictures, it looks like Carpenter is throwing a fastball, but in picture 31.2, Carpenter's palm is facing 1B, which suggests that he is throwing a curveball. At the Release Point, Carpenter's forearm is only 45 degrees off of the vertical, partially because of the reverse-rotation that he underwent at the start of his wind-up.

33. 1 

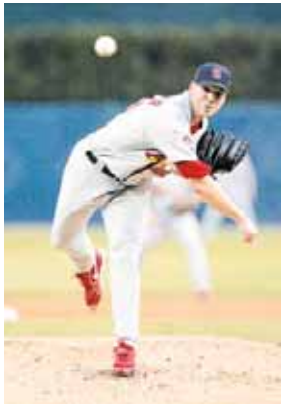
From this view, you can see that Carpenter bends forward as he releases the ball. While this helps him release the ball closer to the plate, it also lowers his release point. Based on the research I have done into the human perceptual system, I believe that releasing the ball high is more important than releasing the ball close to the plate.

34. 1  2  3 

35. 1  2 

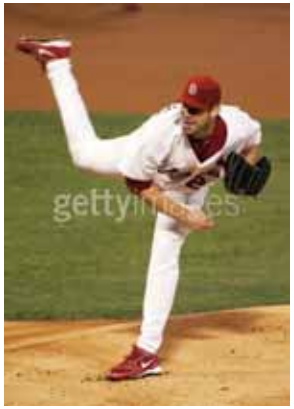
36. 1  2 

37. 1 

38. 1  2 

It's hard to say for sure, but it looks like Carpenter may have (or may have had at some point) an abbreviated follow-through. This could explain the problem he had with his right bicep.

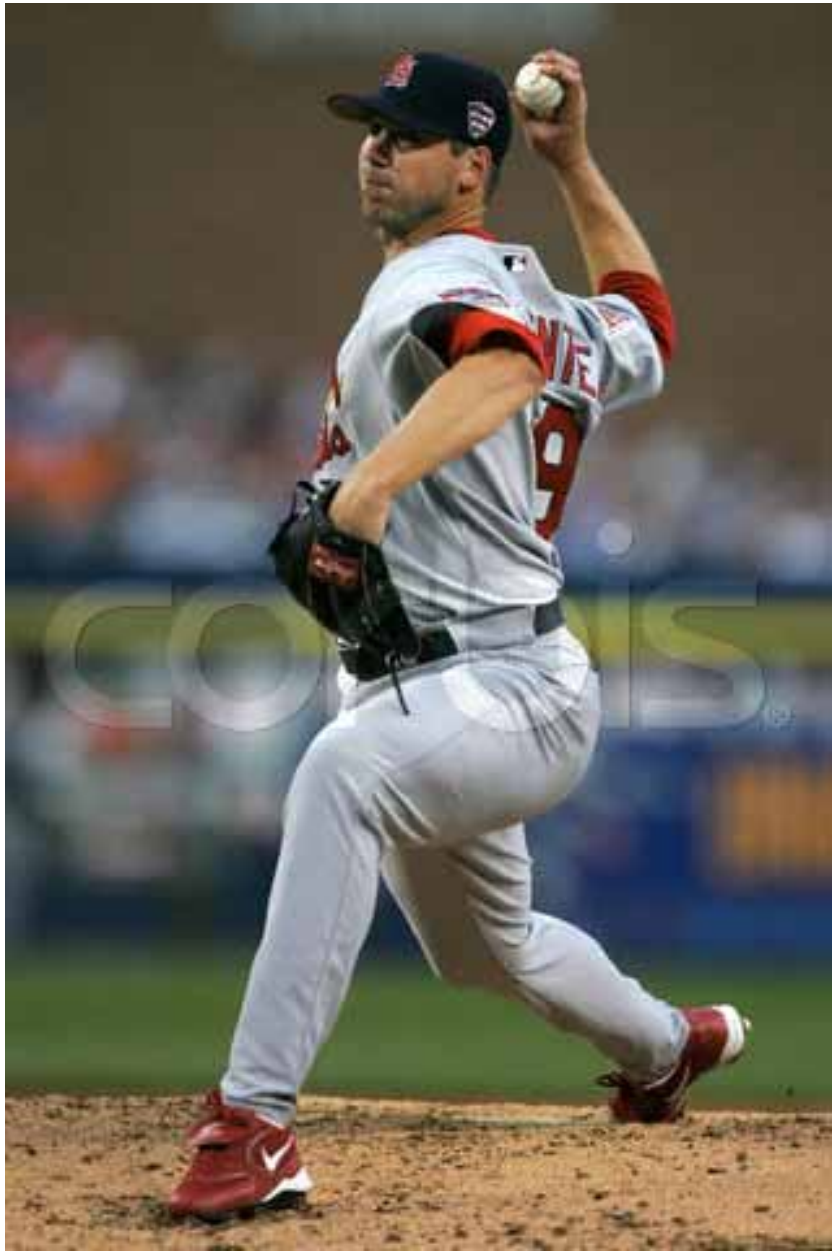
39. 1 

40. 1 

41. 1  2  3 


TORONTO
26


Cardinals
29




TOR


TORONTO