

Interview: Rick Peterson, Former Pitching Coach NY Mets, Oakland A's

Written by Maury Brown

Wednesday, 03 December 2008 00:35



Pitching, pitching, pitching. As it is often heard throughout baseball, you can never have enough of it. Seasons are often won or lost by the rotation and the strength of the bullpen.

With the focus on pitchers, those that become part of the free agency pool can garner some of the highest salaries in baseball.

To place this in perspective, nearly \$1.2 billion was spent on pitching talent in MLB last season.

With so much emphasis being placed on pitching talent, clubs are in a constant state of protecting their investments. and yet, few clubs are doing much more than “eyeballing” their critical investments to see if there are flaws in their deliveries – a glaring weakness that can cost a clubs millions of dollars and precious ranks in the standings.

Former Mets and Athletics pitching coach Rick Peterson believes there’s a better way to pinpoint areas that may land a pitcher on the DL, or worse, land them on the operating table (read more about Peterson at www.rick-peterson.com). Through his work with American Sports Medicine Institute and a start up he is forming, Peterson sees biomechanics as a way to bring players into a lab, get a series of definitive measurements, and with that data, provide objective analysis that allow clubs to make better educated decisions when it comes to investing in pitching.

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And, it's no longer a case of having to have the pitcher come to the lab. His company can bring the lab to spring training, an amateur facility, or any other location, and run the staff through the system to give organizations the biomechanical information they need to find "red or yellow flags" in a pitcher's delivery, and get them righted to "green flags" – a sound pitching delivery.

Peterson outlines why the move to biomechanic feedback is so important: last season, \$330 million in pitcher salary sat in the DL. That translates to approx. one-third of all salaries designated to pitchers – a staggering sum.

When coupled with the down-turn in the economy, the investment in the metrics being promoted by Peterson could save clubs millions of dollars.

The following interview with Peterson is an extensive look into pitching, player psychology, how pitcher arm abuse at the amateur level is creating a shorter career expectancy at the professional level. And how biomechanics and the adjustments that can be made to a pitcher's delivery can prevent injury, or provide sound analysis on pitchers before millions of guaranteed dollars are spent on a pitcher that could fall apart, as opposed to provide the performance that clubs are hoping to see in their investment. – *Maury Brown*

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Maury Brown for the Business of Sports Network: *With the downturn in the economy, this off-season may be a bit different than in the past few years with all but a handful of high revenue clubs being able to spend on free agent talent as freely as in years prior. That means that mid-to-low making revenue clubs will be zeroed in on risk aversion more than ever. For those that may be unfamiliar with your work, when a pitcher is brought in for evaluation, be that through the American Sports Medicine Institute (ASMI), how are they studied to see if they are at risk of injury?*

Rick Peterson: First of all, Dr. Andrew's body of work surrounds the study of major league caliber pitching, and/or high end amateur pitching. They came up with forty-two measurements that they measure in a biomechanical analysis. So for example he'll measure stride length, the angle of the foot and foot contact as it relates to your target, the bend of the knee at foot contact, the bend of the knee at ball release, and so on up the chain. External rotation -- I can

go on and on with the different measurements. Elbow flux and rotation. How fast the shoulder rotates and how fast the elbow rotates. Those are some of the critical measurements.

So when you get a biomechanical analysis, there's enough data in there – and in that database right now are the names of top pitchers that have pitched in the big leagues. You have Roger Clemens, Tim Hudson, Barry Zito, C.C. Sabathia, Scott Kazmir, Aaron Heilmann, Mark Wohlers and years ago, Al Leiter. I'm trying to think of some other names, but those are some pretty prevalent names to give you an idea of what this database is.

So, when you get your analysis and they look at these measurements, these are the people that you're being compared to – the measurements that you're being compared to. So for example, hip rotation velocities... how fast the hips rotate, is directly linked to fastball velocity. So for example, if you have a pitcher that is say in the low to mid 90s and his hips are rotating slowly you realize that you're putting a lot of stress on the arm. You know, it goes up the chain. If you think of his delivery as an upside down tornado (and that's a pretty good analogy), so when you take a look at for example the external rotation of a pitcher, the external rotation as you finish your cocking phase and you're beginning your acceleration phase, the external rotation is about a hundred and seventy degrees at the cutoff line of normal external rotation. Less than a hundred and seventy degrees, you're looking at some major red flags. So if you have some major red flags in that delivery and continue to pitch, you are definitely running a risk of injury.

One of the best analogies that's been used would be that if you put your foot on the brake of your car and your car pulls hard to the right, you can still drive your car, and it will still perform very well, but you're going to wear out the tread on those front tires very quickly. You're not going to get forty thousand miles out of the tread of those front tires. You put your foot on the brake and you start hearing that squeal and then your brakes are grinding, you know you got some major issues.

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When you look at some amazing – just amazing – measurements of the pitching delivery and realize that the speed of this activity, there's a point in time as you finish your cocking phase, meaning that your arm is ready to accelerate through a pitch, from that point most pitchers will either come to a complete stop or come to almost a complete stop, and from that point the acceleration phase lasts .03 seconds. So if you think about that, in .03 seconds that ball is accelerated from zero miles an hour to ninety some miles an hour. We did a presentation for about fifteen hundred coaches at the ABCA one year, afterwards a doctor of physics came up to me and said, "Rick, do you know what that acceleration means in G forces?"

And then I laughed and I said, "I have no idea!"

He said, "If your entire body was accelerated at that same rate of speed for over sixty seconds you would die. Your body could not handle that acceleration, the G forces of that type of acceleration."

When you look at the shoulder activity through the acceleration phase, and they measure what happens with the shoulder, if everything is in sync, and everything is on time, in coordination with the rotational velocities and the lower body, the upper torso, the shoulder does actually no work during the acceleration phase. If you're late most pitching coaches will say "Hey, you're flying open!" That really means that you're late. And if you're late and you're out of sync then your shoulder has to work very hard through that acceleration phase putting major strain on that shoulder.

Several years ago we brought a pitcher to the lab and he had a hundred and forty-three degrees external rotation. Well, a hundred and seventy is your cut-off of normal range. And in this situation he had a physical dysfunction. He had a physical limitation and he needs greater range of motion for that shoulder, for his external rotators. If that is not increased then he's at major risk of injury. And sure enough, nothing was done because he was healthy at the time. He pitched at ninety-four, ninety-five miles an hour, which is his average velocity, touched ninety-seven, and sure enough by July he was on the disabled list and by August he had major shoulder surgery, and ended up missing two years afterwards.

So, that's a clear example of what happens if there's a red flag. You know, there's some pitchers pitching in the big leagues today that when we brought them in their stride length was too short, the bend of the knee was too firm at foot contact and collapsed at ball release. So if your front knee is collapsing at ball release that means that you're slowing down your hips—your

hips are decelerating. So if you think of a hitter and you look at that swing and you think of what happens to the front leg, the front leg firms up or almost locks to a degree – that increases rotational force, by firming up the front leg. To make sure that a pitcher takes yellow flags and red flags and turns them into green flags, there are some conditioning issues that have to be done to make sure that that pitcher, was able to stay healthy.

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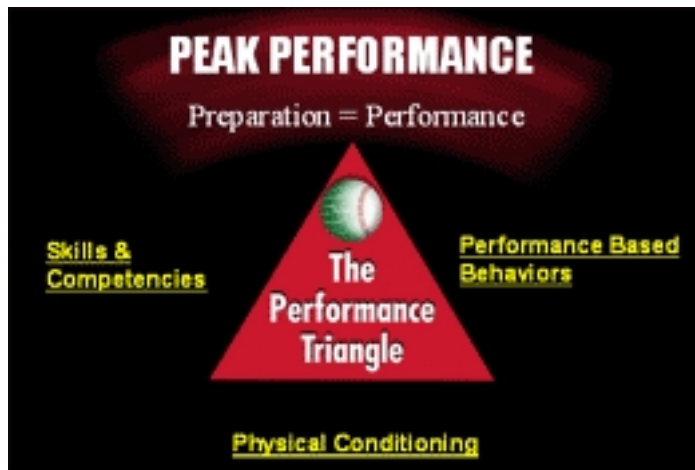
We focus on two ways to stay healthy. One is a fundamental skill as in delivery. The other is physical conditioning. We make sure that your conditioning program is in sync with improving a pitcher's biomechanical measurements.

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Bizball: *Given the rigors of the season, how much focus is placed on the efficiency of a player's biomechanics as the season wears on?*

Peterson: Okay. First, let me verbalize it this way. Number one: the biomechanical study is getting forty two measurements from Dr. Andrews' lab and his database and his research. The terminology that we use with pitchers is delivery. And we say delivery because we really don't talk about mechanics. One of the things that we've done as this program has evolved is to establish a diagnosis of your measurements through the biomechanical analysis. Number two, you have a prescription. We look to see if a pitcher has all green flags, or, if they have some yellow or red flags, we make some adjustments to get that back in sync, whether its a delivery issue or a conditioning issue.

That being said, what we've done over the years, in attempting to formulate a curriculum, which we now have called the P3 Program or Peak Performance Pitching Triangle



One of the things that we've learned is that there's certain drills that will keep the delivery intact. There are phases to a delivery. You have a phase where the foot hits the ground, you have a phase from the time the foot hits the ground through what they call the cocking phase, where you're ready to accelerate, and then you have your acceleration phase, and then your deceleration phase.

There are four basic phases to the delivery. And what we wanted to do is almost an eastern training method. I studied a lot of eastern philosophy of how they train, mentally and physically, and found it quite fascinating. It's fascinating to use the analogy: wouldn't it be nice to say that you've got your third degree black belt in your pitching delivery, because you've mastered it?

So it's almost like working out for your delivery, if you will. So if you cycle certain drills in certain patterns over time, that's what keeps the delivery intact. So when we've taken guys to the lab, then had them go through this program, had them do these drills, and then come back to the lab, the yellow flags that were there previously, or the red flags, are now green flags. The results are fantastic. The fact that pitchers came to the lab in one particular year, and had some yellow and red flags, in their delivery and went through this program, meaning that they did all these drills, and conditioning program, they came back the following year and all those yellow and red flags were now green.

So, to answer your question, on a daily basis, we go through series of drills, with and without the balls; a lot of throwing and non-throwing, with our eyes closed. That's a technique called active visualization, which literally trains the subconscious, and ties into the eastern training methods and ties into peak performance. When you talk about peak performance levels in the west, people try to describe it through adjectives. They say, "Wow, you know, you were in the zone." I could feel that everything was smooth."

In the east they have a noun for that. It's called satori. And satori means when your mind and body are united as one.

So, when you go through delivery and you go through drills and you go through these drills with your eyes closed, you're cementing this drill and delivery, in your subconscious.

Bizball: *This debate has been ongoing... The number of pitchers throwing complete games has been on the decline for some time. There also seems to be a sense – real or otherwise – that pitchers are less durable than they used to be. With all the training and analysis that is now at a staff's disposal one would think that feedback would lead to more efficiency and therefore, longevity as opposed to increased injury. Are pitchers now pushing their bodies to the edge of falling apart? Or, has the strategy of using more middle relievers simply created starting pitchers that have a game expectancy of 5 or 6 innings?*

Peterson: Let me give you my opinion on this rather than weigh in on your comments. One of the biggest things that Dr. Andrews will say about the amateur market is people feel that in order to perfect our pitching skills we need to pitch all year round. This is simply not true. I look at some of the college programs, they go from the fall schedule, where it ends sometime in early to mid-November and then from that point they also continue to throw on the mound. So, they come back from Christmas break and they're right into their season and when they complete the college season, then they're playing summer baseball. It's all year round.

And as you look at the amateur market, depending on the school, they play games indoor all year round. I know that, there's a facility in the Northeast here that, they play games indoor all year round. Dr. Andrews will tell you that there's no down time anymore. So, one of the things that's really interesting from talking to Dr. Andrews is looking at post-surgery on some of the kids that are signed and have surgery within their first year. In disparaging the system he'll say, "You know, Rick, this kid had a forty year old elbow!"

Well, how can you be twenty-two and have a forty year old elbow -- unless that was somehow transplanted when he was eighteen? (laughs) That tells you that there's chronic overuse; that the tread on those tires are worn out. So I think that what's happening on the amateur market, and that's directly linked to what's happening in the professional market.

"If you look at the total payroll of pitchers in 2007 it was over a billion dollars. Over \$330 million was spent for injured pitchers... pitchers on the DL. You're looking at thirty percent of the total payroll!"

Another major factor is the economy and the professional market. One of the major shortages in the industry is quality pitching. So any time you lose a starter, I mean you almost feel like you have to be overly cautious because pitchers live "close to the wall" all season long. And once they hit the wall they don't come off of the wall for a while. You never know when they will hit the wall. So quite often if you look at your research -- and the data within it -- take a look at what happens when guys repeat 130 pitch games, two or three times back-to-back. That track record is not very good for performance and also for people having to take time off. I mean, look at what happens! The pitcher's performance is just not there.

I think what happens on the other end is that you tend to be more cautious than you need to be., But you're so afraid that if you happen to lose a pitcher for a few weeks or a month, the person you're replacing them with is not a fifth starter, it may be a ninth starter.

Look at the facts as it pertains to the loss of money of major league teams. If you look at the total payroll of pitchers in 2007 it was over a billion dollars. Over \$330 million was spent for injured pitchers...pitchers on the DL. You're looking at thirty percent of the total payroll!

That's why when I look at our industry, I believe we have a solution – the biomechanical analysis is a solution to clearly tell you that this pitcher either has all yellow flags, or all green flags, some yellow flags and a red flag or two. It's right there and easy to see. What's amazing to me is that when a team is going to write a check for over \$100 million for a pitcher, they do an MRI, test blood and urine. However, they don't do a biomechanical analysis from Dr. Andrews' research. , That's not part of that program yet in our industry. That's almost incomprehensible to me.

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Bizball: *You worked very closely with Barry Zito during his time with the A's and with that, his remarkable curve. When Zito's curve is on, what is it about his mechanics that makes it work so well?*

Peterson: Well, I don't think you can say, "What is it about his mechanics..."

Bizball: *His delivery, then?*

Peterson: His delivery – it's consistent. When we looked at his curve ball and fast ball in the lab, they're very consistent. The wrist angle is different but the overall measurements are all the same. There's not one distinct delivery for a fastball and one distinct delivery for a curve ball. They're in sync. And because it's in sync, the one thing that was interesting he, I believe, if I'm not mistaken, got two more revolutions, full revolutions in rotation on his curve ball than the other curve balls that we looked at in the lab.

Bizball: *And conversely, when his curve is off?*

Peterson: It's hard for me to say. It's not fair for me to comment. I haven't seen Barry pitch in six years.



**"I say it tongue-in-cheek,
'You're a professional glove
hitter. You get paid to hit
the glove.'"**



"I see the winning organizations using more powerful technology to improve the team's performance. One of those technologies is the biometric analysis for pitchers."