

Six Sigma Takes a Swing: Making More Hits in Baseball – With Roger Hart

Watch the full video at:

<http://www.isixsigma.com/implementation/sports/roger-hart-pivotalswing-interview/>

Michael Cyger: Hey everyone. My name is Michael Cyger, and I'm the founder and publisher of iSixSigma.com - the largest community of Lean and Six Sigma professionals in the world, and the resource for learning to drive breakthrough improvement.

Here's what we do here. We bring on successful Lean and Six Sigma business leaders, learn from their experiences, and share their strategies and tactics. Then, when you have a success to share, you can come on the show and give back as today's guest is going to do.

We are going to go a little out of the typical corporate world today and talk about America's favorite pastime – baseball. The question we're going to answer today is: "Why haven't we seen a .400 hitter in Major League Baseball in seventy years?"

Joining me to answer this question is Roger Hart, the author of *Pivotal Swing: How to Fundamentally Change the Game of Baseball*. And here is a copy of it. You can see it. This is the first version that is out, changed slightly. Roger retired from a successful career as Director of Quality System and Six Sigma Deployment at Sony Electronics and decided to turn his attention to solve a sports problem plaguing athletes and managers for decades, and he is here to share it with us and tell us how he did it.

Roger, welcome to the show.

Roger Hart: Howdy, good to be with you.

Michael: Roger, we are going to start at the beginning. So, anyone, even those not avid baseball fans like yourself, watching this show can understand what you did, why it is significant, and how they can solve problems they

face every day in their lives. So, let's start with this question. What does it mean to be a .400 hitter?

Roger: That is merely an aspect of statistics. It is how often do you get a hit out of the number of times you go to bat. So, a .400 hitter means four out of ten times you go to bat you get a hit. And that is not just hitting the ball, but it is getting a hit that is classified by baseball as a hit, which sometimes it is kind of a strange situation because sometimes a hitter will hit the ball really screwy and it ends up being a hit when other times they hit the ball really well and it is an out.

Michael: So, if I get up to bat ten times in a game, I pop fly it to first base, and they catch it every single time, I am a zero hitter.

Roger: Right.

Michael: Because all ten times they were caught. But if I bunt it and I get to first base all ten times, then I am a thousand hitter.

Roger: Correct.

Michael: Okay. So, we are talking about a .400. Four out of ten does not seem like a statistic that would be hard to do. Why is it so hard to be a .400 hitter?

Roger: Well, this is actually one of the things that I think is very interesting because, in business, like in a manufacturing business, if we had a process that yielded less than ninety-eight percent, we thought the world was coming to an end. In this kind of environment, even hitting .300 is considered quite remarkable to many. It is just very hard. A gentleman – one of the famous baseball players – Ted Williams coined a phrase that is: "Baseball is the hardest thing to do in all of sports. The hardest single thing to do in all sports." And if you Google that, you will find millions and millions of hits on the Internet about the topic of what is the most difficult thing to do in sports. But the vast majority of sports writers and people over the years have basically agreed that hitting a baseball in Major League Baseball – not Little

League, but Major League Baseball – is considered the hardest thing to do in all of sports. So that is why it is hard.

Michael: So, who was the last person to hit .400?

Roger: It actually was Ted Williams. Now, I live in San Diego and it is interesting. Ted Williams was actually from San Diego. And the really interesting side note is, is that my father-in-law actually played on the same high school baseball team as Ted Williams.

Michael: Wow. Was he a great hitter back in high school as well?

Roger: My father-in-law was actually a pitcher, so most pitchers are not good hitters; and he really was not, but Ted Williams was.

Michael: Okay. So, I understand from you that the last person to hit a .400 was Ted Williams seventy years ago. Most athletes today probably hit – what – .200 or .250?

Roger: Probably. To be on a Major League team now –what they call in the show – you pretty much have to be a .250 hitter at least.

Michael: Okay. And if you are hitting .300, you are a rock star.

Roger: The people that hit over .300 are highly paid. Their contracts are millions of dollars more than people that hit .250.

Michael: Wow, okay. And so, clearly that is one benefit, but what benefits would athletes and teams have if they had one .400 hitter on their team? Clearly, the individual, you just said, could make millions more per season if they hit a .310 or .320 over a .250 that they are hitting this season.

Roger: Actually, this is probably one of the controversies amongst those in the game of baseball today. You have to realize baseball is entertainment. It fits into a category of entertainment more than it does the game or more than it does the business. So, if you classify it as business, you are really classifying it as the entertainment business. So, you can have a very – I do

not know if you know the name of Rodman in basketball. I mean just a wild in crazy guy.

Michael: All tattooed up. Crazy hair. Says crazy things.

Roger: He draws crowds and it has nothing to do with how good of a ball player he is, so to speak. So, in baseball, you still have to be conscious. Right now, if you really get down to brass tax, they often call it small ball; and that is you brought up bunting or whatever. A lot of teams do not really want to play small ball because they think that the crowd does not like it. But they also do not like it when there is a pitching duel and two pitchers are out there, and nobody is getting any hits and everything either, because it reduces the entertainment value of people getting to see fantastic hits or seeing fantastic defensive plays being made and stuff like that. So, to me, the biggest issue is, is that we are back to the statistics because I am a process guy. The statistics are that the team that hits more is going to win more games. I mean it is just a mathematical fact that, if you get more hits, you are going to win more games. Now, there has been a trend to where people have been trying to hit the ball harder. In other words, more home runs. I would still, from a personal standpoint, firmly believe that the team that focuses on general hitting and not focusing on home runs will always be the prevailing winning team. And this shows out in the statistics that the team that wins the league is basically always the team that has the highest batting average.

Michael: And can you also say that the team that has the most action on the field – that actually gets hits, that runs bases – produces more entertainment for the fans?

Roger: All I can do on that is give you my personal perspective. That is my personal perspective. I would much rather go to a game – in the book, I refer to the (Unclear 8:14.1) duel that they had. It was like each pitcher faced 56 batters and it was just a huge pitching duel. But in the book, all I said is that is a great way to look at the game, but I consider that a pure failure of hitting. All that is is just nobody had the capability to hit well. And that was partly, from my standpoint, this whole issue of why haven't we had good hitters is because I believe that is what the game is about. It is more that.

Michael: Yeah, I agree. And if you will not say it, I will say it because I know very little about baseball compared to you or compared to any of the other tens of millions of fans around the US, but I grew up going to Dodgers games and I am living up here in Seattle, and I go to Mariners games. We used to have season tickets and I want to see action. I love to go see hockey games because I always know there is going to be action on the floor. Maybe there will be a fight or two, but the puck is definitely going to go all over the place and I am going to see people working hard, showing me that they are a professional athlete, and showing me what they can do that is remarkable. And when I go to a baseball game, I want to see action. I do not want to sit in the same seat and watch a bunch of pitches go over the plate and then change the inning. That is not exciting to me.

Roger: No, I agree.

Michael: So, what would it do to the game of baseball if every team had something like five .400 hitters per team?

Roger: Well, this is kind of an interesting question because, when I was applying to the Patent Office for the trademark for the title, when I told them that my book was "pivotal swing" and it was descriptive of the swing method, they said, "Well, we cannot issue you a trademark for that." I said, "Yeah, okay, but what it also is it is a descriptive of what it is going to do to the game," because if you can change a core level process of hitting – if you can change that by twenty percent – the whole game changes. If you have an improvement of twenty percent, that will take the bottom team all the way to the top and it will just change the whole foundation of perspective, and then you have a situation where, if one team does not even adopt, say, that new method, then they are never going to win. They will still play the game, but they are never going to win.

Michael: Yeah, exactly. It is like the cars that were built that were not built with quality. When Toyota was taking off, everybody wanted a Toyota – high quality, high efficiency vehicle that they knew was dependable. And they started out selling all the American cars and the Americans had to catch up, and a lot of them did not make it.

Roger: Yeah.

Michael: All right, Roger. So, we are going to dig into exactly how you fix this problem, exactly where you are going with that, and why you actually got a trademark and you got a patent on this. I want to dig into that, but before we dig into everything and how you solved the problem, I want to take a step back. I mentioned in the introduction that you spent part of your professional career at Sony Electronics as Director of Quality Systems and Six Sigma Deployment. How long did you spend with Sony?

Roger: Well, actually I was with Sony twice. I was with them about ten or eleven years once, and then I left for a while, and then I came back and was with them for another twelve years after that. But I did many different things there. Mostly in the environment of manufacturing and engineering, quality, quality systems, and eventually getting the quality systems moving into how did Six Sigma fit into the picture.

Michael: Yeah, and your latest role with Sony before you retired was Director of Quality Systems and in charge of their Six Sigma Deployment. Is that correct?

Roger: That is correct, yes.

Michael: What would you consider your biggest accomplishment at Sony related to Six Sigma in process improvement?

Roger: Well, to me, the role that I had was is I actually was not doing as much individual Six Sigma as I was with coordinating the deployment. In that deployment, we went from basically having nobody involved in understanding what Six Sigma was to where we had six Master Black Belts who were actually able to do all of the training after a while. We had over three hundred Black Belts and we had over two thousand Green Belts.

Michael: Wow.

Roger: Plus, I do not really actually have a number, but probably in the hundreds of Champions and Leadership people that were exposed to an

understanding that they had a significant role. To me, the biggest problem you have in the deployment into a company like that is, is you have to have leadership from the top. We will get into this I am sure later too, but change to a company is just so huge; and you cannot effect change if the leadership is not really fully onboard and leading the way.

Michael: Yeah. And so, anybody that knows how Six Sigma is deployed at large corporations or the typical successful deployment, it is top down. It needs a leader like yourself to organize all the Six Sigma processes – how metrics are tracked, how projects are selected and executed, and doing all the training and rewards and recognition to ensure that you are changing the culture of the organization. Do you have metrics around how much productivity savings or cost savings you delivered during your time as Six Sigma Director?

Roger: Yes, I do have one. Because the projects were so varied, especially at the beginning, it was mostly manufacturing. But what we will talk about maybe later too is one of my biggest challenge was how to get the non-manufacturing – the transactional type – people involved with Six Sigma too. But the metric that we came up with was savings – the big master thing that we use. And we tracked it. We had a database and tracked all the projects and we tracked savings. And in the first three years of our major deployment, we had just under five hundred million dollars in savings.

Michael: Wow. And I know there are a lot of calculations around hard savings and soft savings. Would you classify that as all in?

Roger: That is hard savings.

Michael: Hard savings. So you actually removed that cost from the manufacturing line, or you reduced the need for capital expenditures or things like that.

Roger: Right. We had two categories that we really tried to focus on. We called it the top line and bottom line. Top line is you increase sales or bottom line is you eliminated costs or reduced waste.

Michael: Great. And does one project stick out in your mind more than any other, Roger? And I know you were not in charge of the individual projects, but you led the deployment so you had overall responsibility. All the projects rolled up to you and you get to oversee them, and you work with the Executive Team. Does any one project stick out in your mind as like: "Wow, that really displayed the power of Lean Six Sigma at Sony"?

Roger: Yeah, I do have one that I would classify as that, but I feel a little bit worried about the fact that, by making this statement, the vast majority of the projects, and especially in the early stages, all of the development and work by the manufacturing folks was really the core of the deployment and, by far, more people were trained, and more projects were done, and more savings were achieved, and so forth through that. But over the years, I think more transactional things would have started to show up too. We still had a lot of savings in the transactional.

Michael: Yeah.

Roger: But to me, the project that was I guess the most eye-opener to us and maybe even to the Management folks was a projects in Accounts Payable. And I mentioned earlier, in manufacturing environment, if you have a process that yields less than 98 percent, you really come unglued. I mean top management of the company is down on the production line. They are ranting and raving, and yelling and screaming about what the heck is going on; why do we have these problems. Well, what happened was, in the Accounts Payable department, we had a system where when you purchase something and it comes in, and you receive it, and you accept it, and then you get it deployed to the first of the warehousing; and then, from warehousing, production and stuff. We had a system for what we call the Accounts Payable system. When we finally convinced them that they needed to work in this area, they went in and they measured what is called the first pass yield. All right, the first pass yield is how often, when an invoice comes in, does that invoice go in, have all the elements necessary, and it gets paid basically by the computer. We (Unclear 17:50.9) less than thirty percent.

Michael: So, very similar to the yield of batters in Major League Baseball.

Roger: Yes, but here is a situation where, in a big company, we have one side of the company in manufacturing that 98 percent is the yield number that, if you do not achieve it, everybody comes unglued; and here is another part of the company that is literally stumbling and redoing work, and wasting energy and time and money, and nobody is even paying attention to it. So, to me, that was the biggest eye-opener. We were able through a combination of getting some people training and working on that. And that was an example of a quite diverse kind of a project because you had tie into purchasing, you had to tie into receiving, you had to tie into quality departments, you had to tie into the warehousing people, and you had to tie into the accounting and the payable System. So, there were a lot of different facets to the project in order to address why are we having all these problems. If you write the PO wrong, of course the product is going to show up wrong. So you got to fix that too. You cannot just assume you are going to get Six Sigma results when you do not have Six Sigma processes.

Michael: Exactly, and that is a lot of waste and a lot of cost. And people look at it as job security – fixing all these errors – but it happens in every business, in every environment, and I faced it at GE for over a decade. I was at GE when Jack Welch rolled it out, and we saw it in our Accounts Payable, in our Accounts Receivable, and every single department. And people think: 'Well, I do not like change,' but life and work is so much more enjoyable when you do things right the first time, and you take pride in your work, and you do not have to fix errors all day long.

Roger: Yeah.

Michael: Yeah, all right, so let's dig into this, Roger. Anyone that understands Six Sigma knows that it is a roadmap for solving any problem. The acronym DMAIC stands for Define, Measure, Analyze, Improve, and Control. And it is what you used to solve the hitting problem. As a quick overview, you define the problem that you are trying to solve, you collect data to measure the problem, you analyze the data you collected to understand it, and look for the root cause or causes. You improve the process to eliminate the defects that caused the low results that you are experiencing, and then you put your process in control so that it does not degrade again. So, let's run through each of the steps of how you solved the hitting problem, and then what that

solution looked like. So let's start with define. What was the definition of your problem when you thought about solving hitting in baseball?

Roger: Well, I think I started from the basic element of why haven't we had a .400 hitter. That was sort of the driving . . . I mean I started helping my son and that was many years actually before I actually took on the final project, but the key to me was: "Why is management accepting such a low performance level?" Because in my belief it can be higher; and Dr. Kiemele, for example, one of the things he really beat into me was you, as a manager, got to learn to ask the right question. And to me, the right question is not sort of what is wrong, but the question is: "Why can't we get better hitting?" And when I started to analyze and look at that, and develop the desire to pursue it, I really said, "To me, I am going to view it as the low batting average is reflective of a failure of hitting." And the pitching has improved over the years, but hitting has not. So, I consider that a failure of hitting to develop and match the changes that are being made with pitching, and I truly, truly believe that I could find ways to improve it. And that is why I had the desire and the will, so I wanted to go after how do we address that subject.

Michael: Okay. So, you defined the problem as: "Why haven't we had a hitter above .400?" Your measurements were ten at bats and if the average batter is .250, your defect rate was 7.5 times out of one hundred. It was a defect. They were not getting a hit.

Roger: Right.

Michael: And just like we did at the beginning of the interview, you defined what a hit was. It is not just pop fly that is an out. That is not a hit, so you defined what a hit was.

Roger: Right. So, for me, probably the most important element in the define phase, for me, was developing and, at this point, it was actually refining the input process output (IPO) diagram. That, to me, became the real core level coordination; and I revised it many, many times during the overall process of working on this, because I had different perspectives at one time than at other times. But defining what were the key outputs and, again, based upon my education and my learning, my objective in the project was: "How do I

improve the outputs – the desired outputs –and not increase the undesirable outputs in the process?" So, the IPO gave me that focus. In addition, I used FMEA.

Michael: Okay, I do not want to get ahead, Roger, so let me hold you for one second. So, we defined. The first phase of DMAIC is Define. The 'D'. So, we have defined the definition of the problem. I want to go through Measure, Analyze, Improve, and Control, and I want to find out each of those. And I think you are using a lot of the tools in Analyze and Improve, and I want to hold off for a second before we get there. So, the second phase is Measure. And so, measurement seems – and I will just throw this out – pretty easy. The statistics. There is no other game that has as many statistics as baseball. Maybe football. They throw out crazy statistics in football. We have not seen a tight end run this back, but baseball has a ton of statistics; and you know, for every single player, for every single team, for every single season, and for everything, what the batting averages are. So, you can go look it up and you can see that the average hitting is .240 in the American League or whatever it is.

Roger: Yeah.

Michael: So, was that your measurement, or did you have to go out and gather data on the problem and show that like: "Hey, we have not seen a hitter in seventy years that hit above .400. Well, actually, I can go just look up the statistics," and like that is your measurement?

Roger: Well, for me, the measurement phase was not so much that statistic aspect. To me, it was a given. Batting average was the given. That was the focus of what are we going to address. To me, the measurement was more in gathering data about hitting – what causes hitting? So, what I did is there is a program on TV called "Baseball Tonight." I set up my video recorder so that every day that program would record. And during that session, they would typically show many, many hitting episodes, a lot of good fielding episodes, and stuff too. But what the good news was is that they typically were showing the good hits; they typically were not showing the bad hits. And so, for me, the measurement phase was very much aspect of gathering all of the data associated with all of the hitting and getting it into an organized format

where I can see it and use it because I cannot go to every game. I cannot go all over the country.

Michael: So how did you do that, Roger? How do you look at every single batter that is playing a game tonight and take data about their swing, their stance, and whatever other factors you think were important?

Roger: Well, see, that is where you mentioned jumping out of the define phase into the measure phase. To me, I did look at the FMEA in the define phase. And the reason I say that is that, when you start to measure, you want to know whether you are going to measure the right things. And so, I wanted to look at what are the possible causes – what are the more likely possibilities – that would be effecting the outputs so that I would be more efficient in the utilization of my time spent measuring and analyzing.

Michael: Okay. So, what factors did you determine were necessary for you to measure before you went and collected data?

Roger: Well, what I found out was, to me, in the output, the key outputs of the IPO were that accuracy and precision of the bat placement were most important. Now, I say that in contrast to the guys that are trying to hit home runs. Those guys are swinging the bat very hard, but they are not able to put it on the ball.

Michael: Exactly, we made clear differentiation at the start. We are talking about hitting. The problem is hitting. We want over .400. We are not talking about home runs. We are not talking about grand slams. So it is very clear that you are talking about that. But before we get into what were the significant factors, what were all the factors that you measured?

Roger: Well, at that point, I did not have a clear definitive. I had a list of outputs. The outputs were accuracy, timing, confidence, balance, energy transfer, amount of time to execute the swing, was the defined process being followed. This is a common thing in Six Sigma. Even once you set up the process, were the actual elements being followed type of thing.

Michael: Right.

Roger: And you mentioned about the hits. So, to me, even though hits are the most primary baseball statistic that they use, when I get into this – and I say this in the book too – is, is that my feeling is that the hitting coaching and/or the management of the teams are actually following the wrong statistic. What they need to be looking at is the energy transfer hitting – how are they hitting, and precision, and the energy transfer; not whether they get a hit, because if the guy is hitting the ball really well, he is going to get hits. The fact that he happened to hit it right at the shortstop or he happened to hit it right at the left fielder, those are somewhat circumstantial and very, very minute – one-thousandth of a second – difference in timing factors. And those are very hard to control. And part of it, for example, when I was looking at that, I would say, "Okay. Well, why would I say accuracy is more important than balance?" Well, the reason was is because I often saw a hitter that would place the bat perfectly on the ball and not hit it really hard, but he would have perfect accuracy. Poor balance. He was fooled by a curveball or whatever. He would have poor balance, but still get a hit because he had the most important output, which was accuracy.

Michael: Yeah, okay. So, when you identified all these factors; and I assume that you watched a good number of baseball games, because you cannot just watch "Baseball Tonight" and look at all the hits that were done. You need to look at who is doing well and who is not doing well to gather all the data. Is that correct?

Roger: Well, I watched what I call a hitting episode. So, I watched the thousands of hitting episodes. So, yes, in addition to "Baseball Tonight," then I would videotape the game, especially when they were on the weekend or whatever days that they were showing the games. I would watch the hitters in those games. I went to the Padres games a lot. I went to the San Diego Aztecs college games a lot to what in-live conditions too. And I would actually videotape those myself. But in those situations, what I was doing was trying to gain the aspect because, when you go to a game, most of the time the hitting is not good. The thing that was really beneficial about "Baseball Tonight" was I got to get captured in a very short time a lot of good hitting. And when you get into the analysis phase, then there are some issues there that you can work with.

Michael: Right. Yeah. And how did you collect all this data? It is one thing to watch hundreds of games or thousands of games, Roger, and I can understand how painful that was to you for a game that you love, but how do you actually record that data such that you can make an analysis of it later?

Roger: Well, this is where one of the things that is kind of interesting was, in my discussion with Dr. Mark Kiemele, for example, when we were talking about whether he would write the Foreword to the book and stuff, we talked about the difference between an application – a very sophisticated tool – as opposed to the concept. When you first start working on a project, your primary objective is to reduce variation. You cannot get into very sophisticated design of experiments kinds of things when you do not have any control over the variation to start with. So, he was in complete agreement with me when I said, "I really have to work with what I would call more the frontend, simpler, less sophisticated tools – the IPO, the FMEA, and pure logic." Problem solving is not a categorization and stuff. That is where I was focused on because I knew that I was taking this project on. This is the first time anybody has ever looked at a professional sports performance process. And I should not say that. I know somebody has done some Six Sigma on golf, but that is different because you are standing still. There is a swing, but baseball is a lot different when you have got the balls moving at one hundred miles an hour and the hitter is trying to move at seventy or eighty miles an hour in the opposite direction and stuff. So, to me, that was really was a big issue; is that I knew that I was not going to be using sophisticated tools. So, in this sense, what you are describing about the measurement is a little bit different. It is not in micrometer type of readings on a metal shaving or anything like that. This is how do you look at this basic process and how do we go about starting to reduce the variation.

Michael: Yeah. So, after you looked at all of these hundreds of thousands of games and at-bats, what did you do with all of that information to then move into the next phase and analyze it and look for the root causes?

Roger: Okay, this is where the real work started. What I had to do was I took each one of those what I call hitting episodes and I would go into slow motion. I would analyze relative to the information that I had in connection

with my outputs and in connection with my FMEA, looking at what were the things in that particular time – that episode –that stood out to me. What did the hitter do? And what happened when I started to do that, I mean it was really tedious at first. But as I made the list, what started to show up consistently, especially when I had the difference between watching a regular game and watching "Baseball Tonight," was I started to see the difference of head movement. What really became obvious to me when the Padres brought in Rickey Henderson, for example, the year that he came to the Padres, the guy was typically a .280 hitter for fifteen years before he came to the Padres, and he just went kaput. He went to be a horrible hitter. If you watched him hit, it was totally obvious he was moving his head all over the place, and that is why he had dropped down to a .240 hitter. And it was very clear to me. But the fact that he was even hitting .240 was, to a certain extent, amazing to me, but he was such a fast runner. He is like Ichiro for the Mariners. Although actually, he is with the Yankees now, but he is like Ichiro was. He can miss the ball and hit a really poor ball, but he can beat it out. And so, that is a different kind of lie. I feel that the metric of getting base hits is actually, to me, not what hitting coaches should be using. They should be using energy transfer because energy transfer directly relates to precision and it directly relates to the precision of placement. So, what I did was I looked at those videos and I started to see the pattern. The pattern is what was really key to these. What could I change was I had to change the swing so that I would eliminate head movement and improve the accuracy and energy transfer in the process.

Michael: Okay. So the biggest thing was you watched all these episodes. Head movement. Low head movement equated to more hits; high head movement equated to less hits. And then you said how do we stop head movement.

Roger: Yeah.

Michael: Okay, so that moves on to improve, but before we get to improve, that is analyze. So, one of the first things you said was head movement. Was there any other factors that you noticed in all of these hitting episodes that was a factor involved in improving hitting?

Roger: Well, the answer to that is yes, but it turned out that they were all linked to head movement. For example, taking the stride. Every hitting coach nowadays, in their element of teaching the hitting, teach taking the stride. Well, the stride has, to me, two detrimental effects. One is, is that it makes your head move, but the worst one is, is that it forces you to decide what the pitch is before you know what the pitch is. Because if you take your stride associated with a fastball, your swing is going to be way out in front of a curveball; vice versa if you decide the pitch is going to be a change-up and you take your stride, and so the ball has already passed you before you even started your swing.

Michael: Right. And so, for anybody that does not watch baseball, the stride is your front foot moving forward so that you can get what is arguably a little more energy transfer on the ball because you are moving towards the ball.

Roger: Yeah. And I am saying yes to your statement, but I am disagreeing with the analysis being that the momentum. This is what is so funny. All of the momentum comes from your hips and your rotation of your hips. It has nothing to do with the stride. I should not say that. For example, let's take golf. I do not see anybody teaching anybody to take a stride in golf. All of the momentum of the swing in golf comes from how you move the body, rotate through, and develop the head speed in the golf club. That was an added perspective for me because I do understand golf too; was that is why I said eliminating the stride is actually a key element, because you are eliminating the head movement, but you are also building on that whole momentum of precision and accuracy. We are talking two-tenths of a second to execute the swing all the way from the bat coming through to finishing and hitting the ball. You got to do that at two-tenths of a second. And you got to be precise. So, in order to do that, you got to have some things working for you; not have everything working against you.

Michael: Right, okay. So, you gathered all this data. You were able to look at the data and see trends in the head movement. Just like we describe, high head movement – low hitting, low head movement – high hitting. Did you have enough data then to move into analyze and dig in further for the root causes at that point?

Roger: The answer to that is it was probably in the analyze phase is where I really solidified on the factor that I needed to focus on, basically my terms was, eliminate head movement. My objective was to eliminate head movement and to change the swing mechanisms to be able to literally prevent the head from moving as apposed to just reduce the head movement.

Michael: Yeah, and you did a great job in the book, describing that process. So, basically, eliminate the head movement; and you did that by changing the swing path and by changing the stride or that little step with your front foot. Was there anything else that you decided was necessary to change with the pivotal swing in order to eliminate head movement?

Roger: There were two more elements besides those two that you mentioned. The next one was I lowered the bat, because if you see any batter go up to bat today, the bat is basically stick straight up in the air. To me, in the whole concept of Lean and Six Sigma, you want to eliminate waste. You want to eliminate anything that does not contribute to your output that you are trying to achieve. By lowering the bat, I was able to create the environment where the only thing the hitter has to do is move the bat forward. He does not have to control lowering it. He does not have to control how much. He does not have to have an angle involved or anything. He just brings the bat straight forward. That is one of the two. The second one is that I created the pivotal axis. This is the whole key to the name of the swing and the patent; and the whole thing focuses around this. I created the pivotal axis. And the purpose for creating the pivotal axis was to solidify the elimination of the head movement. So, if you are not taking a stride, you can create the pivotal axis to start with. You pivot the body, basically, around the axis. The head is on the axis, so it is not moving. And you pivot and bring the bat to the ball. The most simplified methodology that I could come up with was how to get the bat most precisely to the ball with the shortest amount of time, the shortest amount of energy, and definitely the minimal amount of elimination or loss of accuracy.

Michael: Yeah, and so those are all the factors that are in the book, Roger. I do not want to go into anymore detail on that, but I want to ask you is critically important to Six Sigma practitioners that go through this structured process, which helps people identify the right defects, take the right

measurements, analyze it for the right root causes, and then fix it just like you have done by saying: "We are going to change the swing path. We are going to eliminate the stride. We are going to lower the bat. We are going to create this axis so the batter thinks differently about batting." But the most important part, to me, is that now that you have actually solved the "problem." you need to go prove that you have solved the problem statistically. How did you do that and what were the results?

Roger: Yeah, that was actually very remarkable to me. In the measurement phase, I took four high school ball players and I measured their hitting, and I categorized their hits into three types of hits –Type I, Type II, and Type III. Type I was a line drive. Type II was a decent hit. Type III was a pop-up or a grounder. So, I measured two of those players on live pitching and I used two people on batting cage pitching machines. After I made the improvements, I went back to those four players. I showed them what the improvement and the changes to the process would be. I only did that in fifteen minutes or less. I mean literally that is the only amount of time they had to learn about what I had changed and what were the differences. And so, when they were doing the new process, they were doing it without perfect execution.

Michael: Sure. And just to add a little bit more flavor to that, when Tiger Woods changed his swing on golf in order to come back from the greatest player to non-arguably the greatest player ever to play golf, it took him a year to change his swing. So, it is not a small task to change a swing.

Roger: The benefit that we have here though is that baseball has not been addressed by Six Sigma type of approach, and so we have the benefit of getting the low hanging fruit. So, this is one of the unique aspects and that is why I talk about it in the book, and in general. This is just, for me, stage one. There is going to be, at least, a stage two and maybe a stage three.

Michael: What were the results?

Roger: Okay, on the results. After fifteen minutes or less of training time, I took those four people back to the batting cage or the live pitching and re-measured their hitting using the best they could the implementation of the new process. What happened was is all four players improved. The individual

improvements ranged between twenty percent and forty-two percent. The average improvement was over thirty percent.

Michael: The average improvement was over thirty percent. So, if somebody is batting a .250, what would that bring them up to?

Roger: .312.

Michael: Wow, and suddenly they are making a million more per season.

Roger: And that takes a .315 hitter to a .400 hitter. We have a lot of .315 hitters. We do not have any .400 hitters.

Michael: Yeah.

Roger: I should not say we have a lot. We have some .315 hitters.

Michael: All right. So, I want to know are those four players actually using the pivotal swing today in their games and in their practice. Have they changed the way that they operate?

Roger: Well, three of them I do not know about because they were just people, at the time, who were friends my son had, and I do not know where they live or anything now. The answer to that is my son is using it. He is twenty-six. He turned twenty-six this week. He is playing a City League kind of thing and he is using. He definitely believes that he is hitting better than he did before, when he played in high school and stuff. He played after high school even some, but is he a professional level player? I do not think I can say that, but the answer is he is definitely getting better and he likes what he has learned as a foundation for how to improve his hitting.

Michael: Yeah. Is he measuring his hitting? Does he know what he is hitting on a regular basis nowadays or is not playing on a regular basis in order to record that?

Roger: They just started a new season. He has never given me a number, so I do not know that. I do not try to pressure him on that particular thing. My

main issue is: "Have you learned from the process improvement? Do you like the results? And do you use the new swing methodology instead of your old methods?" And the answer is definitely yes.

Michael: Yeah. Most people do not like change and most people do not want to be changed, and then, on top of that, most people do not like change, but it makes a lot of sense when you are holding the bat up here. You got to bring it down. You got to even it out. You got to make sure you are hitting. And you are saying just hold it down here and you do not have to make as many adjustments as you normally have to in baseball. As I was reading the book, I was doing the stance myself. Not taking a step. Trying to shift my weight around the pivotal axis. And my five-year-old son, who has started tee ball last season, was asking me what I was doing, and I said, "Here is a new swing that we are going to teach you this year." So, let me get into the legal stuff, Roger. You have trademarked the phrase "pivotal swing." A lot of business owners and a lot of authors trademark phrases. It is not a big deal. What I took exception to when you reached out to me and said, "Hey, I have got this Six Sigma process that I applied to baseball," was the patent that you applied for, because the patent says that you own the process of this pivotal swing – of lowering the bat; of not taking a step that everybody in baseball does; of swinging around this axis, which means that if anybody wants to do that pivotal swing in the future, they are going to have to license that from you. Do I have the general understanding correct?

Roger: That is definitely kind of the general aspect. The key, to me, was I did consider the aspect of just making it available to anybody. The problem was, when if you give something away, it has no value.

Michael: True.

Roger: And my dad taught me that and the general perspective in business I learned over the year too was, if you give something away, everybody is just going to set it aside type of thing. So, I wanted to maintain the concept of value. The second element is control. To me, when I made the decision to file for a patent, that made the decision for licensing an automatic decision. I had no choice because if you are going to have a patent, in order to control the

patent, you have to control the usage of it. What I tried to do was to make it very, very simple for amateurs to get a license.

Michael: Okay, tell me what that is.

Roger: In the book it is there too. You just go to the website and, for ten bucks, you get can get basically a license to use it for four years.

Michael: And what is an "amateur"?

Roger: Basically the definition is you are not making any money or earning anything from the process of playing the game. So, as soon as you go to college or college scholarships are involved or the pros, then you are no longer an amateur.

Michael: So, kids in high school, playing baseball. My five-year-old that I want to teach this swing to, who is playing tee ball. Those are amateurs.

Roger: Yeah.

Michael: And it is going to cost me one-time ten dollars for a licensing fee, or is that ten dollars per year, or how does that work?

Roger: Well, the way my patent people advised me to do it is they said, "Set it up for four years." So, for four years, literally somebody through high school, for example, is covered. And so, the idea there is, is that most people probably technically would probably need to do it twice during their career. During Little League and Pony League, and then once more maybe at the time when they are in high school. But a lot of players fall out of the process by the time they get to high school, so those folks are not involved. But the thing that would really be upsetting to me, because I truly believe that the younger players are going to benefit from this far more than the other players because their process is so radically varied that by just adding structure to their process they will improve dramatically.

Michael: Yeah. So, I am swimming upstream. Everybody that plays baseball for the past hundred years; everybody that watches baseball – you hold the

bat up. You take a step. You hit it. If I buy a license and I teach my son to use the pivotal swing so he is getting more hits in tee ball, he likes the game more. It is actually more exciting to play rather than my son is really in it just for the snacks that are after the game. Let's be honest. But now he is actually playing it more. He is getting more hits. He is being more consistent. He is reducing the variation in his hitting. Every coach out there is going to say: "Hey Jake, you need to hold your bat up. You need to take a step." What do I do to combat that?

Roger: I tried to address that in the book, and I know that that is an issue. And when you mentioned about the players that I introduced this to in past, that was the biggest problem they ran into; was when they went back to their environment of playing in high school or even after high school. They constantly were being barraged by coaches and other people of: "What the hell are you doing?" And they did not have the psychological will or the desire to stick to it to see the benefits. So they saw the benefits in their actual performance and they had the numbers even, but they still had difficulty with the issue of will and desire to carry through on solving their problem.

Michael: Yeah, well, it is the social pressures and it is the norms. And people would rather be normal than be abnormal, but actually have a better hitting average.

Roger: The key that you addressed to me though is that it is exactly the same that any project manager or any management effort would have when you are working with either a Six Sigma deployment or with a Six Sigma project. The number one thing is communication. To me, the book is the communication. It is getting the information out there. The next aspect of that, in the implementation, is the acceptance and the willingness to understand. And there are going to be some ball players out there that want to improve. And you saw in the book. I talked about the different players. Who is most likely to be willing to look at a change? The guy that is sitting on the bench is obviously going to be a lot more willing to look at how can I improve my hitting than the guy that is already in the batting corner. So, I think that. And then the next stage comes into the implementation, and the effectiveness of the implementation comes to if a player is trying to do this and the coach does not understand it, then maybe it is going to take a little bit

of a team effort. Meaning you are going to probably have to talk to the coach and say: "Hey Coach, I read this book and this stuff really makes sense to me. And I would like my son to be following this. Maybe you could read it too and see if you can get onboard and maybe we can help these guys be better hitters."

Michael: Yeah, have you thought about sending copies of the book to every single Major League coach and hitting coach out there?

Roger: The answer to that is I have sent it to twenty of the thirty.

Michael: And what has been the response generally?

Roger: I have not gotten a response to them. This is where we talk about change. This is a huge change for them. Do you know the name Bruce Bochy?

Michael: No.

Roger: Bochy was the Manager for the Padres for many years; and it was actually during the time that I started working on this, but he moved up to San Francisco to be the manager for the Giants. But I approached Bochy way back and I said, "We have these tools called Six Sigma." And I made a presentation to him. I had a couple guys with me that were knowledgeable and we basically had a little meeting with him, and tried to convince him to be the sponsor of doing this effort. In other words, I was not planning, at that time, to do it on my own. I wanted to do it in conjunction with the Padres and literally make it a Six Sigma project, working with the Padres. He was very interested, but at the final end he ended up not accepting the offer to work with us on it.

Michael: That is a shame.

Roger: All I am going to look for is the people as I get the book out there and get it in front of people. Parents. To me, I, as a parent, could read that book and I know I could help my son be a better hitter from just reading the book. Now, how am I going to deal with the coach and those kinds of issues? I am

going to maybe buy a copy of the book for the coach too, or I am going to let him borrow my copy, and that type of a thing, because I think the only way that you are going to keep the momentum is you have got to have reinforcement to the execution of the method.

Michael: Well, people at least need to be exposed to it so that if my son is batting, they are not going to try and re-correct it. If people want to go out and buy the book, they can do it. It looks a little bit different than this. Since the time that you provided a copy, it has been picked up by Tate Publishing, you told me.

Roger: Yeah.

Michael: If people want to buy the book, they can buy it on Kindle eBook for \$9.99. Go to Amazon and type in: "Pivotal Swing," and it is there.

Roger: On Amazon, both versions are there.

Michael: Oh, I did not see the in print. Great. So, Amazon, both versions are there. The print is \$14.99?

Roger: \$14.99.

Michael: All right, and I will have links underneath this video. They are not going to be affiliate links. I am not providing them to try and make money. I am providing them as a service to people who are truly interested in learning and evaluating changing the swing of themselves, of their kids, or what have you. If you have a follow-up question, please post it in the comments below this video and we will ask Roger to come back and answer as many as he can. Also, if you want to follow Roger and the Pivotal Swing on Twitter to find out what is changing, who is using it, and what the results are, you can do so at @PivotalSwing. Roger, if somebody wants to contact you to learn more, is there an email address that you prefer?

Roger: Yeah, Roger@PivotalSwing.com.

Michael: Easy enough. I am going to urge the audience right now, like I do every single interview, if you received value out of this interview, please take a moment to say thank you to Roger. It is as easy as posting a tweet with @PivotalSwing. Roger, I enjoyed your video. I am going to think about implementing it, or I bought the book or shoot him an email and tell him what you thought.

Roger Hart, author of *Pivotal Swing*, thank you for coming on the iSixSigma Show, sharing your knowledge of baseball and Six Sigma, and your passion for both, and helping others become more successful change agents, business leaders, and athletes.

Roger: It is my pleasure. Thank you.

Michael: Thank you all for watching. We'll see you next time.

Watch the full video at:

<http://www.isixsigma.com/implementation/sports/roger-hart-pivotalswing-interview/>