

THE TOP PITCHING PROGRAM FOR GAINING VELOCITY

* DO NOT READ THIS IF YOU ARE UNCOMFORTABLE WITH A CUTTING EDGE APPROACH TO PITCHING.



3X

PITCHING





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TABLE OF CONTENTS

| | |
|--|--------------|
| Section 1 :: 3X Introduction | 4-9 |
| 3X Pitching | 5 |
| The 3X Philosophy | 5 |
| The Benefits of 3X | 7 |
| Inspiration of 3X | 8 |
| Section 2 :: Triple Extension (3X) | 10-15 |
| Olympic Lifting Increases Pitching Velocity | 12 |
| Section 3 :: 3X Torque | 16-21 |
| Triple Extension and Separation | 17 |
| What is the “Tilt”? | 18 |
| Stretch Shortening Cycle | 19 |
| Section 4 :: The Power of 3X | 22-26 |
| Section 5 :: 3X Precision | 27-30 |
| Section 6 :: 3X Mechanics | 31-35 |
| 3X Components | 32 |
| Section 7 :: 3X and the Timing Factor | 36-38 |
| 3X Component Timing | 37 |
| Section 8 :: 3X Training | 39-46 |
| Fast Twitch Modeling | 42 |
| Speed Mechanics | 43 |
| Long Toss | 45 |
| Section 9 :: 3X Recovery | 47-52 |
| Icing | 49 |
| Section 10 :: 3X Injury Prevention | 53-57 |
| Pitching Pattern Overload | 54 |
| Poor Mechanics | 56 |
| Poor Physical Fitness | 57 |
| What if I get hurt? | 57 |
| Section 11 :: 3X Mindset | 58-61 |
| The Holy Grail | 60 |
| Section 12 :: 3X Programs | 62-66 |
| Pitching Analysis | 63 |
| Beginner’s Guide to 3X Pitching | 64 |
| Ace Pitcher Handbook | 65 |
| 3X Pre and In-Season Program | 66 |





3X INTRODUCTION





This is an approach to pitching that is very different from what you have been taught in your career. It is the product of many years of research, trial and error, the pure desire to overcome a career ending rotator cuff tear and to throw 90+mph. This approach to pitching isn't for everyone because it will take an insane work ethic to implement this approach into your pitching delivery. If you do not have the mental toughness or the desire to make a major functional change to how you pitch, then I would suggest you not waste your time with this revolutionary approach to pitching velocity. If you are that guy who is looking for an edge, that will help you far exceed your competition and launch you to the next level, then clear your mind and body and open yourself up to **3X Pitching**. Best of luck!

3X Pitching

3X stands for **Triple Extension**. **Triple Extension** is the extension of the ankle joint, the knee joint and the hip flexor. **Triple Extension** or 3X is the foundation of **3X Pitching**. This term comes from the Olympic Lifting world which was the springboard for sport specific training. The reason that **Triple Extension** is so important is that this is how athletes move and generate power. Without **Triple Extension** or pushing off of the ground, we are almost powerless. Better athletes are able to bounce more force off of the ground through the stretch shortening cycle and **Triple Extension** than others. Before I get more into **Triple Extension**, the stretch shortening cycle, ground reaction forces, Triple Flexion, the Kinetic Chain and other advanced terminology that will help teach you a cutting edge approach to pitching velocity, (that at the current time very few coaches are teaching and will allow you to reach your velocity goals) I will first cover the philosophy, benefits and the inspiration of this velocity enhancement and injury prevention focused approach to pitching.

The 3X Philosophy

Most approaches to pitching mechanics are only arm or upper body focused. Most of them are mainly focusing after front foot strike. This would be when the lead leg lands just following the stride. The 3X approach to pitching is lower body focused and believes that the arm is only along for the ride and not the main tool for developing your top velocity. In the case study from the U.S. National Library of Medicine National Institutes of Health called "**An EMG Analysis of the Shoulder in Throwing and Pitching**" by Doctors Jobe FW, Tibone JE, Perry J, Moynes D states that during acceleration of the shoulder and arm, the shoulder and arm had a lack of muscle activity, even though the arm was accelerating forward in space. Here is the conclusion of the entire study:





3X PITCHING



Five male subjects' throwing and pitching motions were analyzed by dynamic electromyography and high speed photography. Electrodes inserted into the deltoid and rotator cuff muscles attempted to define muscle activation patterns during the throwing and pitching cycle. The wind-up or **preparation** (Stage I) had no consistent pattern. **Cocking** (Stage II) had a sequential muscle activation pattern of first deltoid activity, followed by the S.I.T. muscles and finally by the subscapularis muscle. **Acceleration** (Stage III) had a lack of muscle activity, even though the arm was accelerating forward in space. **Follow-through** (Stage IV) was the most active stage with all the muscles firing intensely. The muscle patterns observed during the cycle were largely characteristic of attempts to decelerate the arm.

<http://www.ncbi.nlm.nih.gov/pubmed/6829838>

This proves that the power to move the arm through the acceleration stage, to throw the ball to the target, was created before the acceleration stage, which is also before the arm is ever being used to throw the ball. This means that from the beginning of the leg lift, through the stride and all of the mechanical events that occur after front foot strike, this is when power is being generated. The 3X approach to pitching uses science to teach pitchers how to generate more power before the acceleration stage of the arm.

The scientific formula of **3X Pitching** is based on the science of matter and energy and their interactions, which is better known as **physics**. Older descriptions to pitching like "**Drop and Drive**" or "**Stand Tall and Fall**" are broad labels on pitching styles but fail to define a scientific approach to pitching. **3X Pitching** starts by defining the three most important components and their relationships: **force**, **acceleration**, and **torque**. To understand the importance of the relationship between these three, we must first define them separately.

1. **Force** - is a cause to move by pushing or pulling.
2. **Acceleration** - is the change in velocity over time.
3. **Torque** - is a twisting force.

Now let's put them together in their relationships. **Force** starts the delivery through a pushing or pulling effect to generate momentum. **Acceleration** is the change of speed or velocity of that momentum and **Torque** is adding a twisting force to take advantage of the elastic properties of the body to assist the speed or velocity of the momentum. As you can see these three components are critical and must all be present when pitching. What it is teaching us is if you max out these three components, by increasing your body's ability to generate power in your pitching delivery, you have reached your top velocity.





This is a very simplistic way to define pitching and pitching velocity through physics but it is a very significant way to define it as well. "**Occam's razor**," is an old teaching that says "***the simplest explanation is more likely the correct one.***" This means if you can break something complicated down into its simplest form, then you may just have your answer. This answer is the formula for the **3X Pitching** approach. Later on in this book, I will uncover the building blocks that will build on top of this formula and teach you how to incorporate **3X Pitching** into your own delivery, which will help you reach your velocity goals.

The Benefits of 3X Pitching

Of course, before you do anything in life you want to know why you are doing it and the answer to the "why" lives in the benefits. The list of benefits that come from the 3X approach to pitching is as follows:

1. **More Power**
2. **More Velocity**
3. **Longevity**
4. **Less Chance of Injury**
5. **More Confidence**
6. **More Success**

Velocity enhancement alone is a major benefit that sells most pitchers but you must make sure that you are not gaining a negative with your new positive. For example, you wouldn't want to gain velocity and in return develop a labrum tear. Therefore you must make sure that with velocity enhancement comes injury prevention. This is another big plus about **3X Pitching**.

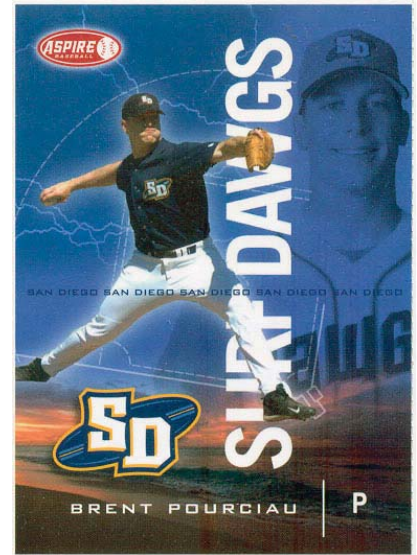
I first developed this approach learning how to pitch again injury free. The bonus was the velocity gain. Once I started to notice the velocity gain while my arm was feeling better and stronger, I realized that I was on to something special. This doesn't mean that you can't get hurt once you learn **3X Pitching**. What it means is it takes a more total body approach to pitching, which helps pitchers who have more "all arm mechanics", reduce the stress they are putting on their rotator cuff and elbow. The effect of these total body mechanics will also improve your longevity. This means you will not only be able to throw more pitches at a higher intensity in the game, but through your entire career. Finally with all of these benefits comes confidence, and ultimately success, but this doesn't come without a price. The price is in the workload. It will not be easy to implement **3X Pitching** into your own delivery, so if you commit, you must be certain that you will find success. If you can't make this commitment, then I wouldn't recommend changing what you have been doing up to this point in your career.





Inspiration of 3X Pitching

I was 18 years old and a late bloomer with a full scholarship to a top level Junior College. I was only 6 feet and 175 pounds at the time. I was set up to be the second starter in rotation for the top Junior College pitching staffs in the state. My coach was expecting a lot of me and I also had a few NCAA DI schools interested. The problem was my arm was killing me. During the second game of the season, into the 4th inning, my arm hurt so bad I was forced to take massive amounts of pain killers and on top of that I had to punch my arm while sitting in the dugout so I would feel the pain of the punch instead of the pain of the inflammation in my arm. I was facing the first batter of the inning and it happened like it was out of a movie. I threw a pitch and my arm completely



gave out. I could no longer move it. I looked at my coach and he knew something was wrong. He took me out and said, "go ice your arm and we will see how it looks tomorrow." One week later I still could not move my arm. I had surgery and my life changed forever. After 6 months of rehab, I had made no progress. My arm still hurt and I couldn't throw the ball. At this point every major Doctor in the area told me I would never pitch again. I even worked with the strength and conditioning coach for the Dodgers and Giants and he told me that I was finished. I was 18 years old and my life of baseball was over. I could not accept this because it made no sense to me at all. This is why I decided to grow up and learn what had just happened in my life.

What I first learned was that the medical field is flawed. They do not have all of the answers. Hell, they had only one answer for me and that was "sorry we can't help you." I then went to coaches and pitching instructors who said if you can't pitch, then you must be finished. This is why I was forced to learn this myself or move on in my life. I loved the game and my talents, so I refused to give up on them. I spent the next five years looking outside of baseball and outside of the medical field for answers because I felt that baseball and medicine had failed me. What I found was that baseball and the medical professions live in their own little cocoons and there is a whole new world of information that has yet to penetrate these organizations. This mainly has to do with politics and traditions. Once I learned that there is a lot more information out there than what I was told, I never stopped searching for more. This searching lead to a new approach to pitching and training for me and this is how I not only pitched again but reach my velocity goal of 94mph and played minor league ball after doctors and baseball told me I was finished.





Even after I decided to retire from professional baseball, I am still searching for more information today, 16 years after my surgery. This searching and my pitching experience has given me the knowledge of pitching mechanics that very few people possess. I would have to say that my inspiration to the **3X Pitching** approach came first from my career ending injury and then the discovery that most approaches to pitching were so old that I felt I could discover something revolutionary. I will let you be the judge of that.

More Information on Brent Pourciau

You can find more information on my background along with some entertaining videos. One of the videos is me pitching to my childhood ideal Jose Canseco during the last year of my pro career. The other video is a interview of me from the same season. Enjoy!

www.TopVelocity.net/about/





TRIPLE EXTENSION 3X





When I first learned of the phrase **Triple Extension** I was shocked. I was in college after shoulder surgery and I was being trained by the top strength and conditioning Coaches in the Nation. I could not believe that in my entire career, from rec ball to high school ball in both football and baseball, I had never heard of this terminology. I was actually very upset. It felt like all of my previous Coaches were holding valuable information from me to hinder my success. This was the day I saw the light. The best way to describe this moment is **Plato's "Allegory of the Cave."** If you have never heard of this story then I suggest you search it online. I saw the light because of this new discovery, this new analytical perspective of the athlete. The fact that none of my baseball Coaches had taught me this, made me question everything they had ever taught me before. After this epiphany, I quickly learned of a new terminology called "**conventional wisdom.**" The definition of this term is:



"The widely accepted but (usually) highly simplistic and often misleading interpretation of real-world events and situations."

<http://stubbornfacts.us/definitions>

I then discovered that baseball is plagued with conventional wisdom because very few, inside baseball, look outside of baseball for more answers. I then realized that if I was going to overcome major rotator cuff surgery and prove all of the Doctors wrong, I could not do this with conventional wisdom. I had to, through science, find the answers that I needed to make my recovery. I am still shocked today to see that science is still in the beginning stages of its impact on the game.

Triple Extension was the beginning for me because it is the most efficient and effective power component to throwing. This is because you can build more power with more joints. These three joints are more powerful than the arm's three joints because the joints of the ankle, knee and hip flexor are connected by some of the largest muscle groups in the body. **Triple Extension** is also the lower half to the kinetic chain that most low velocity pitchers do not use as well as high velocity pitchers. The **kinetic chain** was also a new term that I discovered.



"This is the concept that each part of your body is interconnected. The biomechanics of your foot affect those of your ankle. The biomechanics of your ankle affect those of your knee. The biomechanics of your knee affect those of your hip." <http://www.contracostachiropractic.com/glossaryofterms>

Without **Triple Extension** a pitcher can create very little momentum. The only way a pitcher or thrower can generate energy **WITHOUT Triple Extension** is by using only the force of gravity and what torque you can develop from that force of gravity. This is





not even close to the power that you can create from **Triple Extension**. This is because **Triple Extension** is the drive off of the ground. This is what allows basketball players to jump so high and sprinters to run so fast. **Triple Extension** is a mechanical necessity of almost every major sport. Without this critical mechanic, the athlete is left almost powerless.

The reason I knew **Triple Extension** was important to pitching because I discovered a correlation between the power I was developing with the Olympic Lifts through **Triple Extension** and the power I was generating through my stride. Both my max lifts and my pitching velocity were increasing together. I also felt my mechanics changing on the mound because my stride was increasing and so was my speed through my stride. This is when I discovered that **Triple Extension** was just as effective in pitching as it was in Olympic Lifting. After I discovered this phenomenon and used it in my recovery, I started **TopVelocity.net** and wrote my first article on this called, "**Olympic Lifting Increases Pitching Velocity.**" You can read the article below. This was the beginning of **TopVelocity.net** and **3X Pitching**.

The question that I got the most after the article below was, "Why do most pitching coaches in baseball never mention this critical component to velocity or Olympic lifting?" This is a good question, but I believe it to be the effect of conventional wisdom. This is why I have decided to spend countless hours putting together the 3X approach to pitching for those who are willing to look outside of baseball for answers. Not only that, but this approach is what allowed me to not only come back to baseball after major rotator cuff surgery at 18 years old, but to also hit 94mph in a minor league game after doctors said I would never play again. My motivation today is to use my experience and knowledge to help those athletes reach their goals and dreams.

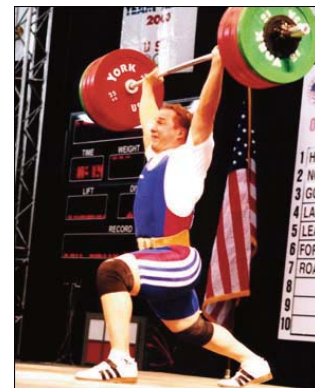
Olympic Lifting Increases Pitching Velocity

<http://topvelocity.net/olympic-velocity/>

To understand the effects of Olympic lifting on pitchers, you must first understand how velocity is measured. I will use Newton's Second Law of Motion, along with the Catapult Theory, to explain pitching velocity.

Newton's Second Law:

The acceleration (velocity) of an object in motion is dependent upon two variables – the net force acting upon the object and the mass of the object. As the force of propulsion acting upon the object increases, the acceleration of the object increases. As the mass of the object increases, the acceleration of the object decreases.





Newton's 2nd Law of Motion:

$a = f/m$ (f = force, m = mass, a = acceleration)

Let's put this into baseball terms. Newton's Second Law of Motion would state that to throw a baseball 90 mph would require 6.5 pounds of pressure applied to a baseball, with a mass of 5 ounces, for two tenths of one second (.20).

6.5 pp applied to a 5 ounce baseball for .20 seconds = 90 mph fastball

Therefore to increase an 80 mph fastball to 90 mph you must either increase the force applied or the application time. The application time is how long you hold on to the ball once the force is applied. Subtracting 25% of application time forces a pitcher to increase the applied force by 33%. Increasing the application time by 10%, increased to .22 seconds, would add 10 mph to an 80 mph fastball.

80 mph fastball + 10% more application time = 90 mph fastball

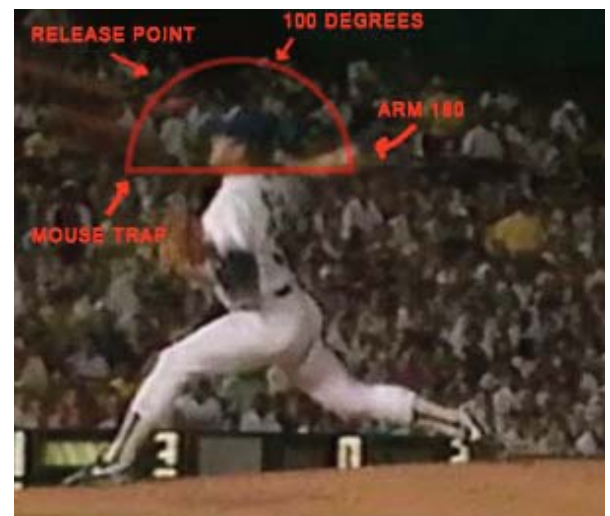
** If you desire to see the formula in more detail that explains Newton's Second Law defining the velocity of a baseball in motion then refer to Dr. Mike Marshalls article at:*

www.drmikemarshall.com/ChapterTwenty-Nine.html To find info scroll down to "1. The Release Velocity Formula for Baseball Pitchers."

Catapult Theory:

The Catapult is made up of three components: the pivot, the coil and the arm. Let's add a ball to the end of the arm to represent a baseball. To measure the velocity of the baseball, after the arm is released and the ball is in motion, we use Newton's second law as described above. The importance of the Catapult is its relation to a pitcher at his full range of motion before launch of ball (See picture of Nolan Ryan below). If the Catapult pivot is not stable and is moving forward during release of the arm, then this will decrease the force applied to the ball at launch. The result: poor velocity. Now, if we stabilize the pivot,

meaning no movement, and continue to apply the same force to the ball, when the arm is released and the ball is launched, it will reach its potential velocity. To keep force applied to the ball consistent, the coil must maintain pressure on the arm during the entire delivery process.





How does Olympic lifting come into this equation?

First reason: it is the only type of lifting in the weight room that trains **Triple Extension**.

What is Triple Extension?

This isn't something new to the sports world. Olympic lifters have been using the term "**Triple Extension**" for a long time. **Triple Extension** occurs when the ankle joint extends, the knee joint extends, along with the extension of the hip flexor. Visualize a long jumper in mid air like here (Notice left leg in **Triple Extension**). Also notice, in the picture above of Nolan Ryan, his right leg has **Triple Extension**. You can see his ankle, knee, and hip flexors in full extension. There is no weight lifting that trains the body pushing off of the ground as a single unit better than the Olympic Lifts. **Triple Extension** plays in every sport that involves pushing off of the ground.



Second reason: notice the lifter doing a split jerk at the top of the article. This is a very similar movement to pitching, more similar than any other weight training exercise. Studies have shown that athletes get better when training within their sport. This is called sport specific training.

This lifter is using **Triple Extension** to drive the weight up. Just like the pitcher driving the ball to the plate. The only difference here is the consequence of error. If the lifter loses momentum in the hips, he will drop the weight. If the pitcher loses momentum in the hips, he will throw a home run to some lucky batter.

Now, how does Triple Extension increase velocity?

In all ways described in the Catapult Theory above and Newton's Second Law, it adds both application time and force applied to ball.

First let me explain how it increases application time, which is the most efficient way to increase velocity. Maximum application time comes from full range of motion. For example, Nolan Ryan has a 180 degree range of motion in the picture above. This is the maximum possible. This means the Catapult is set to its potential, with the arm all the way back. For this to occur with a pitcher, the hips must be pushed under the shoulders. The only way to push the hips under the shoulders is to extend the back leg ankle, knee and hip flexor, also called **Triple Extension**, at the perfect time. With hips all the way under the shoulders, the pitcher now has reached his full range of motion, therefore increasing the application time to build or maintain force to the ball. If the hips are lagging, the chest is leaning forward and the arm is leading the body, then minimal application time has occurred. Less range of motion equals less potential to create





more velocity.

Triple Extension adds force to the ball because it aids in the momentum originally generated from the lift leg along with gravity. This only aids the momentum, if **Triple Extension** occurs, just before front foot strike. If it happens too early and the hips have not moved down the mound, then the hips open too soon. This kills the purpose of good momentum and it also kills full range of motion.

With the chest out and the hips under the shoulders, the chest and chin must remain up until the launch of the ball to keep the pivot stable through the entire delivery.

More benefits of Olympic lifting!

Not only do these lifts train **Triple Extension** better than any other style of lifting but it specifically trains fast twitch muscle fiber. This is what makes an athlete explosive. For pitchers and baseball players, getting stronger in the weight room has been forbidden, until the steroid era came to be. Now everyone is lifting. This isn't a trend. This is because it works!

The last benefit of Olympic lifting for the pitching delivery occurs during stabilization of the front leg. Like described in the Catapult Theory, stabilization must occur to prevent decreasing force applied to the ball. Therefore if the pitchers landing leg moves forward or gives away, then force is decreased to the ball. The result: poor velocity. Notice Nolan Ryan in the picture here. His front leg almost triple extends. This means he is preventing instability in his front leg by holding and even extending it back into his hips. This is why he reached his top velocity.



So how do you get started?

In the weight room, but first you must find a professionally certified Olympic Lifting Coach. These lifts take a lot of training to perform correctly, so to prevent injury, I do not recommend performing these lifts without a proper coach supporting you. Please check with your physician before performing these lifts and remember weight is not important. Your form in the weight room and on the field is all that matters. Always sacrifice weight for good mechanics.





3X TORSION





Triple Extension is a powerful component to pitching but it alone will not get the job done. It is the engine in the car but without the transmission to convert that power into the force on the wheels and the steering column to guide that force to the destination, the engine is just a hunk of metal. **Triple Extension** is the foundation to power pitching but for it to convert into velocity, the power it generates must be transferred through the kinetic chain to the ball. During this transfer, torque is used to accelerate its energy and transfer it into the ball. The second major component to the 3X approach is called "**Separation**." Tom House, the founder of the National Pitching Associate (NPA) and the pitching coach to some of baseball's most success pitchers, (Nolan Ryan, Randy Johnson, Roger Clemens, etc.) first coined the term "**Separation**" and brought evidence of its benefits to the world of pitching mechanics. "Separation" is the separation of the hip and shoulder joints. Separation is also referred to as "Core Torque." The NPA has proven in their 2005-2006 Velocity Study that:



"The results from our study indicate that just about 80% of a pitcher's real velocity comes from the torque of hip and shoulder separation;"

Separation is the first time that elastic energy is used in the body to assist momentum during the delivery. Separation in **3X Pitching** is as important as **Triple Extension**. The reason **3X Pitching** is called **3X Pitching** and not Separation Pitching is because Separation is a major component but not the foundation. **Triple Extension** is the foundation of the athletic pitcher but without Separation, it is useless. This is why in the **Ace Pitcher Handbook**, I combine both **Triple Extension** and Separation as one component. They must work together. You can't have one without the other.

To truly understand how **Triple Extension** works mechanically within the delivery and how it is critical to create optimal hip to shoulder separation, we must understand the mechanics of Triple Extension and Separation as one component.

Triple Extension and Separation

Front foot strike is the most critical moment in the delivery for the pitcher. It is the moment when the body's power begins to transfer into the velocity of the ball. It is also the point when concentric forces transfer into eccentric forces and take advantage of the stretch shortening cycle, which has a tremendous effect on the velocity of the ball. This is the moment of **Triple Extension** and Separation. **Triple Extension** is a concentric force and Separation is a reaction to that force creating an eccentric force. Most young pitchers have very poor separation because they do not adequately use **Triple Extension** and eccentric motor coordinations when throwing a baseball. They use more concentric muscle contractions when throwing the baseball which prevents





3X TORSION

optimal core torque or Separation. Optimal core torque will only occur if the drive leg is fully extended **JUST BEFORE FRONT FOOT STRIKE**. You must understand this major detail. You will not create optimal hip to shoulder separation without achieving Triple Extension before front foot strike or just at front foot strike. This means the hips have started to open before the front foot has landed and the throwing arm has not been activated. At front foot strike the landing leg will stabilize and allow the opening of the back hip to slam into the front leg. This will create an explosive rotation of the hips that will never happen if Triple Extension does not occur before front foot strike or just at front foot strike.

The glove side is another important aspect to core torque. It acts as a fulcrum for the shoulders to pivot around. If you drop your glove side or allow it to open too early then this will cause the throwing arm to activate before optimal core torque is created. Tim Lincecum describes this event perfectly here in the famous *Sports Illustrated* article called, "How Tiny Tim Became a Pitching Giant":

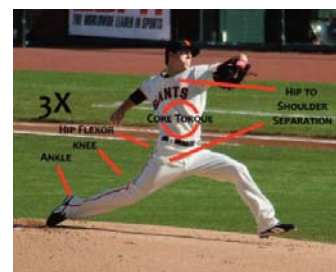


"Don't open up too soon because then you lose leverage," Tim says. "If you twist a rubber band against itself, the recoil is bigger. The more torque I can come up with, the better."

Tim Lincecum is telling us that he works to keep his glove side closed as long as possible and he even rotates his shoulders more closed as Triple Extension occurs in his drive leg to build more torque and he says more torque is better. This is not coming from a guy who is 6'5 throwing 98 mph but from a guy who is 5'9 throwing 98 mph.

What is the "Tilt"?

This is keeping the head and shoulders over the butt during the stride. This will use gravity to pull back on the shoulder, which will support optimal hip to shoulder separation. Pitchers who lean their shoulders and head inside or over their belt buckle during their stride throw more side arm and have less core torque.



The stretch shortening cycle (SSC) occurs during Triple Extension and Separation and also during rotation of the throwing arm, which is the second point of building elastic energy or creating torque. External rotation of the throwing arm must occur late in the delivery to generate optimal torque in the shoulder, along with forward trunk tilt or chest thrust as described in the **Ace Pitcher Handbook** (If you are confused about the sequence of components of pitching mechanics that I am describing, then jump ahead to the **3X Mechanics** section). To understand how the SSC is critical in reaching your top velocity, we must first look at its definition.





Stretch Shortening Cycle (SSC)



A stretch-shortening cycle (SSC) can be defined as an active stretch (eccentric contraction) of a muscle followed by an immediate shortening (concentric contraction) of that same muscle.

The increased performance benefit associated with muscle contractions that take place during SSCs has been the focus of much research in order to determine the true nature of this enhancement. At present, there is some debate as to where and how this performance enhancement takes place. It has been postulated that elastic structures in series with the contractile component can store energy like a spring after being forcibly stretched. Since the length of the tendon increases due to the active stretch phase, if the series elastic component acts as a spring, it would therefore be storing more potential energy. This energy would be released as the tendon shortened. Thus, the recoil of the tendon during the shortening phase of the movement would result in a more efficient movement than one in which no energy had been stored.

http://en.wikipedia.org/wiki/Stretch_shortening_cycle

The case study performed by Stodden DF, Fleisig GS, McLean SP, Lyman SL, Andrews JR, labeled the **Comparison of High Velocity and Low Velocity Pitch Deliveries** states that high velocity pitchers achieve more external rotation followed by early maximum internal rotation. The reason for this is in the SSC. An article written by, Kevin E. Wilk, PT', Michael I. Voight, MEd, PT, ATC, SCS2, Michael A. Keirns, MA,, PT, ATC, SCS3, Vern Cambetta, MA4, James R. Andrews, MD5, Charles I. Dillman, PhD6 called **Stretch-Shortening Drills for the Upper Extremities: Theory and Clinical Application** is the best explanation for the previous study.

The article starts by explaining that the SSC is only effective if the eccentric contraction is of short range and explosive.



The muscle's ability to use the stored elastic energy is affected by time, magnitude of stretch, and velocity of stretch. Increased force generation during the concentric contraction is most effective when the preceding eccentric contraction is of short range and is performed quickly without delay.

Research does support that the faster a muscle is loaded eccentrically, the greater the concentric force produced.

<http://www.ncbi.nlm.nih.gov/pubmed/8343780>





3X TORSION

This is important to understand because when you first feel the results of the improved SSC in your own delivery, you are going to want more. This means you are going to try to stretch it out more like Nomo in the picture here. This will only work against you because as the quote states above, the SSC is only effective if it happens quickly and by increasing the range of motion this could potentially slow down the explosiveness of the stretch shortening cycle. I do believe when learning something new it is better to over exaggerate. You will learn how to use the SSC quicker, if you overstretch this position, so you can feel the creation of more elastic energy. Later you can work on its efficiency and explosiveness.



As with all good information there comes the catch. There is one mechanism in the body that will limit your potential to generate more elastic energy and it is called the **golgi tendon**. This tendon is located at the insertion of skeletal muscle fibers. This tendon is there to shut off the firing of the muscle if the tension becomes too damaging to the muscle fiber.



Since the golgi tendon organ serves as a protective mechanism limiting the amount of force produced within a muscle, its stimulation threshold becomes the limiting factor. Desensitization of the golgi tendon organ may be possible, thereby raising the level of inhibition and, ultimately, allowing increased force production with greater loads applied to the musculoskeletal system.

I believe that this desensitization of the golgi tendon occurs when your limits are pushed during training. This is another reason for performing a good strength and conditioning program that is sport specific and built around the SSC.



The implementation of the stretch-shortening program begins initially with the development of an adequate strength and physical condition base. The development of a greater strength base results in greater force generation as a result of both the increased cross-sectional area of the muscle and the resultant elastic component. In order to produce optimal strength gains, a structured plan must be instituted to prevent potential over-use injuries.

It has been the authors' clinical observation that patients performing stretch-shortening exercise drills have accelerated muscular performance gains compared with individuals who have not trained in this fashion.





3X TORSION

The most significant contraindication to an intense stretch-shortening exercise program is non involvement in a weight training program.

What this information is revealing is that those pitchers who are better at using the SSC to generate power are the pitchers with the highest velocities. It also proves that those pitchers who do not train with a good weight training program will not be as effective in using the benefits of the SSC.

The only opportunity for pitchers to take advantage of the SSC is just after front foot strike with hip to shoulder separation and during chest thrust and external rotation of the throwing arm. Timing and the muscle relaxation of these complex muscle movements is the key to using the SSC. The Velocity Drills and the Fusion System in the **Ace Pitcher Handbook** is a training program built around the SSC. The key to you reaching your velocity goals is in how well you can take advantage of the SSC.





THE POWER OF 3X





Power is the best way to measure an athlete's ability. Power represents the product of strength and speed of movement expressed in Watts. Power is defined as $\{(Force \times Distance) \div Time\}$, where force is measured in Newtons (1kg=10N), the distance in meters and time in seconds. To truly understand how this equation applies to pitching mechanics we must define these variables within the mechanics of pitching. Force in athletics and pitching mechanics comes from our muscle's ability to react with the ground. This is called **Ground Reaction Forces**. Thanks to Newton's Laws of Motion, we know that for every action there is an equal and opposite reaction. So if we drive X amount of force into the ground, then the ground will return the same X amount of force. This also means the harder we drive force into the ground, the harder it will drive back. **Triple Extension** is the most powerful motion the body can produce because force is being applied through three joints. This means that in the Power Equation, Force most effectively comes from **Triple Extension** of the drive leg in pitching mechanics.

The next variable of the Power Equation is distance. Distance in pitching mechanics is simply the length of the stride. The final variable of the Power Equation is time. Time in pitching mechanics is how long it takes for the pitcher to throw the ball from leg lift to release point. So if the Power Equation tells us that the amount of force applied through a certain distance divided by the time it took to travel through that distance, equals the power output then what does this mean to the pitcher? For pitching mechanics this would convert to say, the amount of **Ground Reaction Forces (GER)** achieved through **Triple Extension (3X)** and the distance of the stride, divided by the time it takes to speed through that distance, will equal the pitchers power output and if that power transfers into the ball efficiently, it will equal velocity. So to increase power a pitcher must either increase the GER through 3X or increase GER through 3X along with the distance of the stride or decrease the time it takes to complete the throw, which also means to increase the speed through the stride.

The point of using all of this brain bending scientific analysis is to prove how **Triple Extension** is really the key to increasing the pitcher's power output, which in return will increase ball velocity. There is no better opportunity for a pitcher to generate power than through **Triple Extension**. The muscles in the legs and core are by far the most powerful muscle groups on the body. They also can recover faster and produce power longer than the small muscle groups in the arm. The only time that **Triple Extension** can build power is in the stride. This is why high velocity pitchers have longer and faster strides than low velocity pitchers. The case study performed by Stodden DF, Fleisig GS, McLean SP, Lyman SL, Andrews JR, labeled the **Comparison of High Velocity and Low Velocity Pitch Deliveries** proves that early in the pitching motion, the two groups were dissimilar in the timing of their movements, while their late movement





THE POWER OF 3X

timing was much more similar. This implies that early trunk and torso movements are more varied among pitchers than late arm movements. Through my own video analysis I find this to be true. What I have found is that high velocity pitchers move longer and faster during the stride phase than low velocity pitchers, which is the case with the hardest throwing pitcher ever in the Sports Science video here

<http://espn.go.com/video/clip?id=5661690>. Tom House uses scientific analysis to prove that this pitcher not only has the longest stride in baseball but he moves through his stride faster than most MLB pitchers as well. He then makes the point that he also has more back hip to back shoulder separation than most MLB pitchers with 64 degrees of separation. Explosive **Triple Extension** is how pitchers like the hardest throwing pitcher and Lincecum have longer, faster strides and more separation. This is because extending the ankle, knee and hip flexor is the only way you are going to reach a stride length that is 90% - 100% of your body height and the speed at which you can extend these three joints is going to determine how fast you move through your stride. It will effect back hip to back shoulder separation because when you triple extend your drive leg while opening your front foot, you are pushing your hips open to the target. If you are performing this at an incredible rate of speed, then your back shoulder will be left behind and that will create optimal separation as described in the Sports Science video as one of the key components of why the hardest throwing pitcher ever is capable of throwing 100+ MPH.

The question now becomes: if **Triple Extension** or 3X is the key to generating power in the pitching delivery, then how does the pitcher increase his ability to Triple Extend his drive leg with more speed and strength? A more broad question would be: how does a pitcher increase his body's power output? Dr. Garhammer has the answer to this, along with my strength and conditioning coaches who gave me this information which allowed me to not only overcome major rotator cuff surgery but hit 94mph with my fastball. The answer is the Olympic Lifts. Here is a summary of Dr. Garhammer's case study below which gives us the answer to these questions.



"Garhammer measured the power outputs of elite Olympic and powerlifters. The highest average power output of any lift occurred during the second pull of the Olympic clean. The second pull of the clean was measured at an incredible 52.6 watts per kilo of bodyweight. In comparison, the highest power outputs of elite male powerlifters were 12 watts per kilo of bodyweight during the squat and deadlift. The bench press sputtered in at a very dismal 4 watts per kilo of bodyweight."

** Dr. Garhammer is the author of over 80 technical articles on a variety of biomechanics topics, he is a professor emeritus at Cal State Long Beach, and has also taught at UCLA and Auburn University. He is a former NSCA Coach of the year, and a member of the Strength and Conditioning Hall of Fame.*





THE POWER OF 3X

Dr. Garhammer's study is jaw dropping because it proves that the second pull of the Olympic clean which is called the **Hang clean** is by far the most superior lift in the weightroom to increase an athlete's power output. This exercise should be in every athlete's training program, including pitchers. The reason that the hang clean produces so much more power than any other lift is because of **Triple Extension** and the catch. The catch is when the athlete lands the bar on the upper chest. This is important because to catch the bar on the chest, you must not only drive the weight up like in a squat but you must drive it up with enough strength and speed that when you stop, the bar continues moving. This way you can shoot under the bar and make the catch.

The hang clean is not the only lift for training power. It is just the best. All of the Olympic lifts are perfect lifts for connecting the upper and lower kinetic chain. This has also been proven as the best way to build power in athletes. Training programs that do not incorporate lifts and exercises that connect the upper and lower kinetic chain do very little for the athlete.

Not only do the Olympic Lifts train power through **Triple Extension** but also resisting **Triple Flexion**. This last benefit of Olympic lifting should be the icing on the cake when it comes to convincing a pitcher to use the Olympic Lifts to build power. Triple Flexion is almost as important to pitching as **Triple Extension**. In the case study performed by Stodden DF, Fleisig GS, McLean SP, Lyman SL, Andrews JR, labeled the **Comparison of High Velocity and Low Velocity Pitch Deliveries** states that:



"compared to the low ball velocity group, the higher ball velocity pitchers demonstrated less lead knee flexion velocity after front foot contact and greater lead knee extension velocity at the time of ball release."

This means that in the delivery when the front foot lands higher velocity pitchers have a stronger front knee. The front knee does not move forward over the front toes. High velocity pitchers also begin to extend the front knee as their weight shifts into their chest and out over their front leg.

Flexion is a position that is made possible by the joint angle decreasing. This is the opposite of Extension. Therefore Triple Flexion is the opposite of **Triple Extension**. This is what the case study is describing. High velocity pitchers have less front leg triple flexion at front foot strike than low velocity pitchers. This is once again more evidence that Olympic lifting is critical for building the power pitcher. All of the cleans train Triple Flexion strength during the catch of the lift. When the athlete catches the bar on the chest the ankle, knee and hip flexor will flex due to the weight. The athlete then must resist that flexion by driving the legs back into **Triple Extension** to finish the lift. This is the same event that is occurring when the lead leg lands after the stride in the





THE POWER OF 3X

pitching delivery.

Power is king in all sports and **Triple Extension** is the driving force. **Triple Extension** makes jumpers jump higher, sprinters run faster, and with optimal hip to shoulder separation, pitchers throw harder. That is a fact!





3X PRECISION





Now that you have a good understanding of how important it is to use the lower half to generate power, let's go into the importance of directing that power to the goal. The goal being the strike zone.

When you move up into the more elite levels of the game, you will learn that you will be more successful if your performance is more precise than accurate. To truly understand this point, we need to define how they are both different. Precision is producing the same result every single time. Accuracy is producing a result with a degree of closeness. An example of the two and how it applies to pitching would be if a pitcher continues to throw the ball on the bottom outside part of the plate but the result is a ball. This would mean the pitcher is precise but not accurate. If a pitcher is accurate but not precise would be if he continues to place the ball in the strikezone but scattered all over the strikezone, this would mean he is accurate but not precise. This is important to understand because being accurate but not precise is more of a mechanical issue than being precise but not accurate. For example, you could have perfect mechanics but you continue to miss on the outside corner. The issue could be that your momentum is landing in that direction and all you need to do is shift your momentum more towards the target. This isn't as much a mechanical adjustment as it is a directional change.

Let's now take this knowledge and move it into how to become more precise than just accurate. If precision is performing the same result time after time then we must, from the beginning, have control of our power as a pitcher. This control comes from the **Force Vector** and the center of gravity (COG). The **Force Vector** is the direction in which the pitcher is using ground reaction forces (GRF) to accelerate their body through **Triple Extension (3X)**. The **Force Vector** for a pitcher is the angle of the drive leg ankle to the drive leg knee. The center of gravity is a pitcher's center of mass. This is the core of the body, mainly the hips and stomach. Here is the rule of law on how this works:



*"When the **Force Vector** angles the same direction as the COG, we are producing propelling or accelerative forces. when the **Force Vector** created by the GRF opposes the direction of travel of the COG we create a breaking or decelerating moment which disrupts the current state of movement."*

<http://www.bodybuilding.com/fun/progressive2.htm>

Both events are occurring in the pitching delivery but first, for a pitcher to be precise, the **Force Vector** and the center of gravity must be pointing towards the goal which is the target. Mechanically this would mean that the pitcher's drive leg knee must be inside the drive leg foot before the lift leg has reached the top of its lift in the beginning of the delivery. This would put the **Force Vector** in the direction of the target. The





3X PRECISION

next mechanical adjustment would be to push the hips out in front of the drive leg knee at the same moment so the **Force Vector** and the center of gravity are in the same direction and ready to accelerate towards the target. The sooner the **Force Vector** and the COG is in the direction to the target, the sooner the pitcher can start to generate power towards the target. The point that everything lines up is during the “Load” position. This is just before **Triple Extension**. If **Triple Extension** occurs before the **Force Vector** and COG are in line with the target, then the pitcher’s movement is heading up instead of towards the target. This will affect the pitchers timing and limit his ability to transfer his power into the velocity of the ball after front foot strike. Here is Cody Hall in the “Load” position with his **Force Vector** and center of gravity perfectly in line and his drive leg is ready to extend and fire.



The final event of the stride would be when the lead leg lands and triple flexion occurs. This means the **Force Vector** is now opposing the direction of travel of the COG. This will decelerate the hips and core and transfer that energy into the upper kentic chain, which is the shoulders and then the arm for ball release. This event must also be performed consistently and correctly for the result to be precise. Performing this event incorrectly would be allowing the front leg knee to continue to flex and change the direction of the **Force Vector** away from the COG or hips and core. This would cause the pitcher to stand at release and then the results will become inconsistent. Most low velocity pitchers do not perform either of these events correctly which has been proven in the case study performed by Stodden DF, Fleisig GS, McLean SP, Lyman SL, Andrews JR, labeled the **Comparison of High Velocity and Low Velocity Pitch Deliveries** . If a pitcher can get into these position consistently, then their mechanics will be precise and as long as their power and energy is moving towards the goal or target, then their results will also be accurate. If these precision focused





3X PRECISION

mechanics are not used, then the pitcher can still be accurate but precision and optimal power output is unlikely.

Notice in the picture below of Cody Hall and how he is unable to align his front leg **Force Vector** up with his center of gravity. This means he isn't completely decelerating his lower kinetic chain, at front foot strike, which is transferring all his power or energy into the upper kinetic chain and into the ball. Even though he failed to align his force vector towards his center of gravity he did stabilize his front leg well which will significantly support his precision over the plate.



The **Force Vector** is as much a power component as it is a precision component by helping the front leg stabilize. This makes this 3X component critical to increasing effective pitching velocity. You will learn more about how the **Force Vector** effects power and hip rotation in the next section on 3X Mechanics.





3X MECHANICS





The foundation of **3X Pitching** is **Triple Extension**. This is not the only component to this revolutionary approach. It isn't enough to only learn **Triple Extension** of the drive leg to enhance performance. You must learn why 3X is the foundation and how it is the power in the kinetic chain before you can implement this approach to pitching into your own delivery and benefit from it. This is why this approach to pitching is not a quick fix program. It is an entire new discipline to pitching, but the end result will be a more powerful pitcher. With this approach and a power focused strength and conditioning program for the athletic pitcher, you will reach your velocity goals.

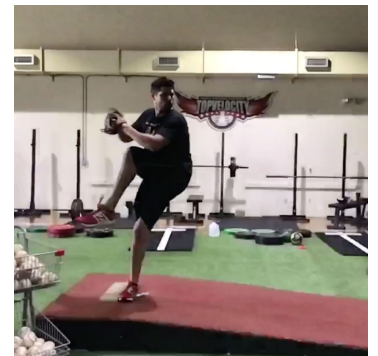
This section will define each component of **3X Pitching**. This isn't enough to teach you how to implement these components into your delivery. You must use the **3X Pitching Velocity Program** with the **Instructional Videos** to teach you the drills and exercises necessary to learn the muscle memory that will help you achieve these 3X components. Before you run off and purchase the **3X Pitching Velocity Program**, I suggest you send in a pitching video of you for analysis to first see what components you need to implement. For more information about this, view these sections below.

3X Components

These components are also mentioned in the **Ace Pitcher Handbook** and the **Instructional Videos**.

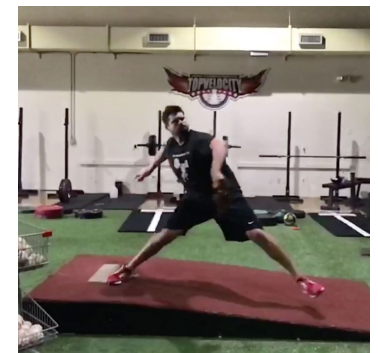
1. Lift Leg Momentum

This is your opportunity to increase the mass of your center of gravity. This is why we lift the leg and lead with the hip. Also you want your drive leg knee inside your drive leg foot. This will happen if, as you lift your leg, you push your hips away from the rubber. By doing all of this, your force vector is in the direction of your center of gravity, which will allow you to accelerate through your stride and build momentum.



2. The Load

This is called "The Load" position because it is the point in the delivery where you load your gun. You want all of your weight on your drive leg and your shoulders closed and in position for the launch. This means your drive leg is flex similar to the same flexed position you would be in before jumping or sprinting. Most importantly your **Force Vector** is inline with your front hip and your lead leg foot is closed along with your glove side.





3. Triple Extension and Separation

This is the foundation of **3X Pitching**. This is when the power begins. Just after "The Load" position you must fire your drive leg and extend your ankle, knee and hip flexor as you throw your lead foot open towards the target. During this exact moment your shoulders must remain closed. It is easier to hold the shoulders closed when your shoulders and head are tilted back over your butt because you are now applying gravity to the upper inside of your shoulders. The key is to triple extend as hard and fast as possible to help create more separation and open your hips completely towards the target. This is a better approach than just rotating your shoulders back. This is why **Triple Extension** is the



foundation of this approach. If you fully triple extend your drive leg as hard and fast as possible this will not only increase your stride but speed you through your stride faster.

IMPORTANT NOTICE: FOR THIS COMPONENT TO BE COMPLETE YOU MUST MAKE SURE THAT YOU ARE ACHIEVING TRIPLE EXTENSION OR 3X JUST BEFORE FRONT FOOT STRIKE. This is critical because if you achieve 3X after front foot strike then you will have more lead knee flexion which will effect precision and velocity.

It is also important to understand and implement a linear Force Vector just before front foot strike. The more linear the **Force Vector** the more effect **Triple Extension** will have on hip rotation and **Separation**. Most low velocity pitchers struggle with the linear Force Vector and its support of Triple Extension. The more a low velocity pitcher can focus and improve the linear **Force Vector**, the bigger the impact they will have on increasing pitching velocity.

I also refer to these previous three components as the Power Stride. Before you attempt to implement the power stride into your delivery, you must first determine that you have the leg power to perform the movement. Here is a quick drill you can use to test your leg power.





3X Power Stride Strength and Speed Test

1. Stand in a full stride that is at least 90% of your height. If you are 6 feet tall then your stride should be roughly 5 feet 4 inches.
2. Make sure that both of your feet are facing forward in a straight line.
3. Make sure that you are on the ball of your drive or back leg foot.
4. Keep most of your weight on your drive or back leg.
5. When you are ready to perform the test lift your front foot and at the same time fire and triple extend your drive or back leg. **Triple Extension** is the extension of the ankle, knee and hip flexor.
6. MAKE SURE THAT YOU TRIPLE EXTEND YOUR DRIVE OR BACK LEG BEFORE YOUR FRONT FOOT LANDS.
7. You also want to hear the drag of your back foot just before front foot strike.

If you do not have the speed and strength to perform this test, then you need to start training with the “Fusion System” which is the strength and conditioning program in the **Ace Pitcher Handbook**. You will need to develop the speed and strength necessary to be able to implement these 3X components.

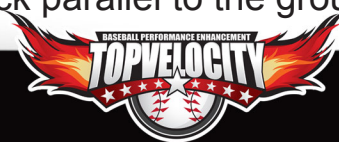
4. Chest Thrust and External Rotation

After **Triple Extension** and **Separation**, your energy is now moving into the upper kinetic chain. At this point you want to launch your chest towards your target as your shoulders rotate open. Once your trunk is flexed forward in line with your hips towards the target, your arm must have stayed relaxed, back and following. This means the ball should still be behind your head in the same place it was during the last component. This is possible only if you allow your arm to externally rotate. This means to let your arm roll back like a catapult. When your arm is fully externally rotated with your elbow above your shoulder, then you have built torque in the shoulder for launch.



IMPORTANT NOTICE: EXTERNAL ROTATION MUST NOT OCCUR IN THE ARM UNTIL THIS COMPONENT. DO NOT LET EXTERNAL ROTATION OCCUR IN THE PREVIOUS COMPONENTS.

Most high velocity pitchers are able to implement 180 degrees of external rotation, this is when the arm rolls back parallel to the ground, along with optimal forward





trunk tilt.

Most of the components following **Triple Extension** and **Separation** are in reaction to the previous components. To make adjustment in these components you must make adjustments first in the previous components.

5. Elbow Extension and Internal Rotation

This component will only occur fast enough if you were successful in developing enough power through 3X and the SSC of the core and shoulder torque. If this was the case, then you want to achieving internal rotation as quick as possible after external rotation. Higher velocity pitchers have earlier internal rotation after external rotation. **REMEMBER THAT PULLING THE ARM DOWN TO PITCH RELEASE WILL PREVENT EARLY INTERNAL ROTATION.** To achieve early internal rotation you must keep your chin tuck and only allow your shoulder to rotate towards your release point. The best way to train this release is with a football. The **Beginners Guide to 3X Pitching** in the **3X Pitching Velocity Program** explains and illustrates this drill!



6. Stabilization

This is preventing triple flexion of the landing leg. This was covered in detail in the **3X Precision** section. This must occur at front foot strike and then the leg must extend back into the body's center of gravity until ball release. This will use ground reaction forces to transfer the energy from the stride into the upper kinetic chain and then the ball.

Pitchers like Justin Verlander really take advantage of the velocity enhancement of this component by achieving this double extension of the knee and ankle before pitch release. Verlander is able to even achieve hyper-extension before pitch release. This is a major credit to his high velocity because of his average hip to shoulder separation. I would advise pitchers to enhance hip to shoulder separation over working to achieving hyper-extension of the front leg which is not healthy for the joint.





3X TIMING FACTOR





The timing of the kinetic chain is what separates good ball players from great ball players. It is also the key to success in every aspect of the game of baseball. When making a mechanical adjustment within a skill, the benefits of the adjustment may not occur until the timing of the new mechanics is in sync. To implement **Triple Extension** and all of the components following **Triple Extension** in your delivery, you must first understand the timing of these components.

3X Component Timing

1. Lift Leg Momentum

This is the first component of the delivery, which means it doesn't have any timing issues. It mainly just starts the delivery.

2. The Load

This component is preparing the launch, which begins in the next component. This means the timing of this component must not be cut short. You must make sure that you can load completely on your drive leg, while your hips are moving forward towards the target, before you move into the next component. This component should start as early as possible following the previous component.

3. Triple Extension and Separation

This component is most influenced by timing and the **Force Vector**. If the **Force Vector** takes too long to line up with the front hip then the pitcher will leap off of the mound instead of drive off of the mound or the pitcher will not **Triple Extend** at all. For 3X to enhance hip rotation and precession, the **Force Vector** must line up with the front hip or lower and be in the direction of the target.

To achieve optimal core torque, 3X must occur just before front foot strike. This is why Lincecum talks about his ankle kick and how important it is to his delivery. This ankle kick is what finishes his **Triple Extension** just before front foot strike and gives him his incredible hip to shoulder separation or core torque.

4. Chest Thrust and External Rotation

This component must immediately follow the previous component without any delay. This is because the body's momentum must continue to accelerate to ball release. If a delay occurs, then the body's momentum could start to decelerate, which would reduce the full potential range of motion of this component and effect velocity.





5. Elbow Extension and Internal Rotation

This component must immediately follow the previous component but must happen as late in the delivery as possible. The later in the delivery, the more velocity will be generated. This is because this will increase the amount of external rotation in the throwing arm. Most young pitchers allow this component to occur way too early in the delivery.

6. Stabilization

This is the final component and it must occur just before ball release. This means the pitcher must extend the front leg back into the hips, just before ball release, to transfer all energy from the lower kinetic chain into the ball.







3X Pitching is an athletic approach to pitching. It assumes that the pitcher is strong enough to move power through the kinetic chain efficiently and effectively. The problem is very few young pitchers have the strength and speed necessary to generate enough power to use the entire body when pitching. This is why a strength and conditioning program is very much a part of the 3X Approach to Pitching.

I have found in coaching **3X Pitching** and performing video analysis, that muscular weakness is the reason for most of the mechanical issues I encounter. This is also why I stress a good strength and conditioning program as much as I stress good pitching mechanics. The focus of a good strength and conditioning program is to increase your strength to weight ratio. This means how much do you weight, to how much power you can generate in a short period of time. I am not talking about strength in lifts like arm curls or leg extensions. I am talking about strength in total body lifts like all of the Olympic lifts. These are lifts that build functional strength, not lifts that only focus on hypertrophy. Hypertrophy is abnormal enlargement of a body part or organ. This does occur when modeling your muscular structure for more fast twitch muscle fiber but should not be the main reason for an athletic training program.

There are tons of pitching coaches out there that discourage weight training all together and I find this to be completely clueless. I have heard well known pitching coaches say that weight training cannot help a pitcher gain velocity. If this is the case, then why did the Mitchel Report have so many pitchers on it? The Mitchel Report was an investigation into the Illegal Use of Steroids and Other Performance Enhancing Substances by players in Major League Baseball. Why would pitchers use an illegal substance like steroids to enhance their body's ability to build or model fast twitch muscle fibers? More fast twitch muscle fibers means your body can produce more power within a short period of time. If it can help hitters like Barry Bonds and Mark McGwire hit homeruns, then it can help pitchers like Roger Clemens and John Rocker dominate hitters with a upper 90's fastball. I am not advocating illegal substance use here. I am only making a point that strength and conditioning will increase pitching velocity just as steroids stacked with strength and conditioning increases hitting performance. Here is the proof. The chart below comes from the National Strength and Conditioning Association. This chart describes how to manipulate your hormone levels **naturally** to gain athletic benefits. The **Fusion System** in the **Ace Pitcher Handbook** was created to manipulate the endocrine system in this way to speed up the recovery process and promote a Bigger, Stronger, Faster athlete/pitcher.





How Can Athletes Manipulate the Endocrine System with Resistance Training?

General Concepts

- The more muscle fibers recruited for an exercise, the greater the extent of potential remodeling process in the whole muscle.
- Only muscle fibers activated by resistance training are subject to adaptation, including hormonal adaptations to stress.

To Increase Serum Testosterone Concentrations

Serum testosterone concentrations have been shown to increase by using these methods independently or in various combinations.

- Large muscle group exercises (e.g., deadlift, power clean, squats)
- Heavy resistance (85% to 95% of 1RM)
- Moderate to high volume of exercise, achieved with multiple sets or multiple exercises
- Short rest intervals (30-60 seconds)

To Increase Growth Hormone Levels

Growth hormone levels have been shown to increase by using either of these methods or both in combination.

- Use workouts with higher lactate concentrations and associated acid-base disruptions; that is, use high intensity (10RM, or heavy resistance) with three sets of each exercise (high total work) and short (1-minute) rest periods.
- Supplement diet with carbohydrate and protein before and after workouts.

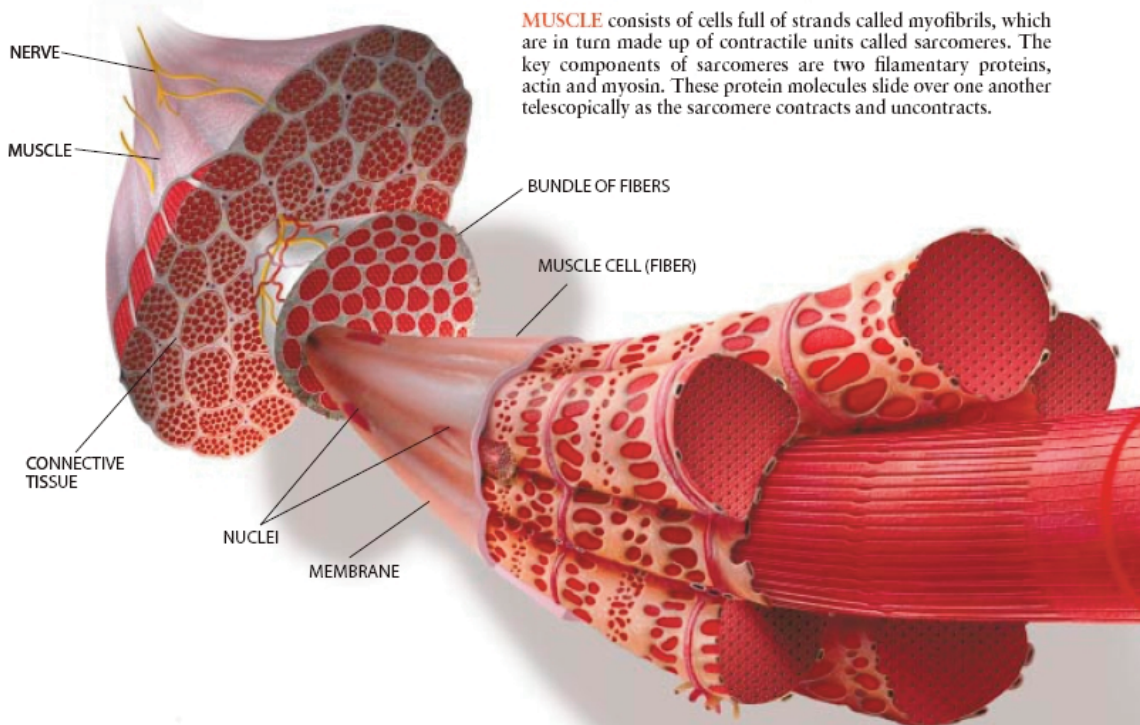
To Optimize Responses of Adrenal Hormones

- Use high volume, large muscle groups, and short rest periods, but vary the training protocol and the rest period length and volume to allow the adrenal gland to engage in recovery processes (secreting less cortisol) and to prevent chronic catabolic responses of cortisol. This way the stress of the exercises will not result in overuse or over training.





Fast Twitch Modeling



(picture taken from <http://www.fitnessspotlight.com/2009/03/09/maximize-performance-training-muscle-fiber-type/>)

To truly understand why we train as athletes to become Bigger, Stronger, Faster and why it is critical to our success, we need to learn more about muscles and the different type of fibers associated with those muscles. The two muscle fiber types are fast twitch muscle fibers and slow twitch muscle fibers. Before we can talk about muscle fiber types you need to learn a little about the biology of a muscle. Use the diagram above or search the web for some basic biology information on muscles. The best way to learn the difference between the two muscle fiber types is with the chicken analogy which I will explain here.

When you eat chicken you are aware that there are two types of meat, white meat and dark meat. Dark meat has more fat and therefore is better tasting. White meat has less fat and is more dense than dark meat. It is a lean meat. The dark meat is found in the legs of the chicken. Chickens only walk and stand on their legs. The muscle types in the dark meat are slow twitch. These muscle types are designed to fire at low intensity over long periods of time. White meat on the other hand is in the wings of the bird. Even though chickens do not fly they still use their wings to flap quickly to help move them around. The muscle types in white meat are fast twitch. These muscle types are designed to fire at high intensity over short periods of time. This is a simplistic explanation of muscle fiber types. There are even more muscle fiber types within





the category of fast twitch muscle fibers. I will not cover this in this book. I just want to make sure that you understand why strength and conditioning is a critical part of velocity enhancement.

The main point of learning about muscle fiber types is that 40% control over these fiber types are influenced through training. Canadian scientists, Drs. J. Simoneau and C. Bouchard proved this in their work. They estimated that 40% of the variance of fiber type is due to environmental influences (i.e. exercise while 45% is associated with genetic factors). This is gold for the athlete because this means that they can enhance their body's ability to generate power, speed and strength, through a fast twitch muscle fiber focused training program. This means if you have two athletes/pitchers who have similar genetic abilities, the better athlete/pitcher will be the one who trains smarter and harder.

It isn't enough to only train your body to remodel to have more fast twitch muscle fiber than slow twitch, but you must have the muscle memory to use this explosive power in your pitching delivery. This is why I developed a technique for pitching, called **Speed Mechanics**.

Speed Mechanics

This is a term I coined to illustrate the importance of speed and momentum in the pitching delivery. Just because you have perfect mechanics doesn't mean you will throw hard. This is a major misconception with most pitching coaches. They will tweak and over tweak someones delivery making the excuse that they are just not perfect and if they were perfect their velocity would skyrocket. In my experience, this is rarely the case. Strength and conditioning is just as or more important than mechanics. This is why natural athletes who were born with incredible strength to weight ratios have amazing careers, even with poor mechanics. There are many pitchers in Major League Baseball who have poor mechanics but through their athletic abilities, have overcome their poor mechanics and still dominate the game. This is why **3X Pitching** promotes a balance between good mechanics and a good strength and conditioning program.

Speed Mechanics is the mojo to 3X Pitching. I wouldn't say it is complete magic though because we still do not know everything about the body. It will take the 3X Mechanics and convert them into velocity. For example, if you could move through Tim Lincecum's mechanics perfectly but at a slow pace, does this mean you are going to throw the ball 98mph? Of course not! What is missing? Speed! You have





3X TRAINING

to not only have good mechanics but you need the speed necessary to convert those me-chanics into the velocity of the ball. This is called **Speed Mechanics**. This is the focus on the speed of your body as you move through your delivery. To reach your top veloc-ity your speed must accelerate all the way to pitch release.

Most young pitchers either wait to accelerate after front foot strike or decelerate after front foot strike. You must learn to accelerate through your stride into front foot strike and continue to accelerate to ball release to reach your top velocity. Think of a sprinter when you think of **Speed Mechanics**. A sprinter must do the same. He must, through **Triple Extension** of the drive leg, accelerate to his front foot, and then transfer that speed into the speed of the other leg. Pitchers must do the same thing but after front foot strike, must transfer that speed into the velocity of the ball. A pitcher will benefit from moving through their delivery like a sprinter which means accelerating until the event or race is over. So the next time you shoot some footage of yourself, check to see if your speed is accelerating through the entire delivery. I also recommend requesting your 3X Pitching Profile to be recorded with your next 3X Pitching Video analysis, so you have record of your times between components.

The 3X mechanics that support **Speed Mechanics** is **Triple Extension** and chest thrust or forward trunk tilt. This is the only points in the delivery were momentum is the focus and this momentum is converting into torque. To accelerate through the delivery you must align your **Force Vector** with your center of gravity as soon as possi-ble. This is critical because you can not begin to accelerate your drive leg through **Triple Extension** until this has occurred. You must also achieve **Triple Extension** just before front foot strike to prevent lead knee flexion which will affect your ability to ac-celerate your momentum to ball release. Lead knee flexion is the main reason most young pitchers decelerate after front foot strike which is due to not achieving 3X before front foot strike. Less lead knee flexion is a component of high velocity pitchers stated in the case study performed by Stodden DF, Fleisig GS, McLean SP, Lyman SL, An-drews JR, labeled the **Comparison of High Velocity and Low Velocity Pitch Deliv-eries**. Once you have 3X and optimal hip to shoulder separation at this point, then your speed must continue to accelerate with chest thrust or forward trunk tilt. Forward trunk tilt, along with building shoulder torque with external rotation, is another high velocity component in the case study performed by Stodden DF, Fleisig GS, McLean SP, Lyman SL, Andrews JR, labeled the **Comparison of High Velocity and Low Velocity Pitch Deliveries**. This means if we see **Speed Mechanics** as a sprinter would, then the race through the delivery begins with 3X or Triple Extension and continues through chest thrust or forward trunk tilt. If you fail to accelerate through these compo-nents, then your top velocity will not be reached. Understanding 3X Mechanics is not enough to





reach your velocity goals. Implementing **Speed Mechanics**, which is training your body to have the power to accelerate itself through the 3X Mechanics is the key. The hard work now becomes modeling your body to have the fast twitch muscle fiber necessary to move like an explosive elite athlete.

Long Toss

This has been a hot topic on TopVelocity.net. When I talk about how long toss is not good for you as a pitcher, I am talking about the style of "Air it Out" long toss. I believe in throwing the ball up to 150 feet on a line on occasion. Anything farther, I am against and I have good reason.

I didn't write this section of the book until last because I was waiting for the Andrews Sports Medicine Institute to release their latest study on the **Biomechanical Comparison of Baseball Pitching and Long-Toss: Implications for Training and Rehabilitation**. They have performed studies on long toss up to 180 feet but this study took it past this distance because of the influence of "Air it Out" long toss programs. The study once again proved what I have been saying for a long time. Throwing the ball over 150 feet is not only hard on the arm but horrible for pitching mechanics. Here is the conclusion of the ASMI study.



Hard, horizontal flat-ground throws have similar biomechanical patterns as pitching and are therefore reasonable exercises for pitchers. However, maximum distance throws produce increased torques and changes in kinematics; caution is therefore advised for use of these throws in rehabilitation and training. J Orthop Sports Phys Ther, Epub 5 January 2011. doi:10.2519/jospt.2011.3568.

<http://www.ncbi.nlm.nih.gov/pubmed/21212502>

Throwing the ball at a maximum distance proved that the later components of high velocity pitchers was limited. These components are from the other ASMI case study performed by Stodden DF, Fleisig GS, McLean SP, Lyman SL, Andrews JR, labeled the **Comparison of High Velocity and Low Velocity Pitch Deliveries** that I continue to post again and again on this site because of its priceless value to the pitcher working to reach his velocity goals. The components in this study that are limited by "Air it Out" long toss is forward trunk tilt and external rotation. This type of long toss will affect muscle memory, which in return will affect a pitchers release point, which is critical to velocity and pitch location.





3X TRAINING

I highly recommend that long toss, up to 150 feet, be used in a throwing program as an intensity exercise. It should NOT be used as an "Arm Strengthening" exercise. It should also not be used more than mound pitching.

The **3X Pre-Season Program** has the perfect alternative to long tossing which is called the 3X Power Throws. These throws use distances to increase intensity but prevent the pitcher from changing mechanics as the distances increase. It also makes it more difficult for the pitcher to reach distances past 150 feet. Check out the **3X Pre-Season Program** to learn these new throws.

3X Pre-Season Program:

www.TopVelocity.net/products/





3X RECOVERY





One of the biggest secrets to success, especially with pitching, is recovery. Those who can recover faster have a major edge on the game. Recovery affects everything about the athlete. Recovery may not seem like a big issue for young pitchers but the older you get and the higher level of play you move up, it becomes crucial. So learning it as early as possible will be a big plus in your career.

Recovery first starts with mechanics. If you can adjust your pitching mechanics to become more efficient, then your body will breakdown less. This means recovery becomes less of an issue but as you move up levels of the game, it becomes more of a challenge to compete at an intense level while reducing the stress to your body. This is when you need all the help you can get. To learn how to support your body's recovery mechanisms you must first learn some basics about the body.

Recovery starts in the cells. Recovery is a process that the human body must go through on a consistent cycle. The process involves cleansing: **refueling**, **healing** and **rebuilding**. During an intense anaerobic workout or game, ATP is used as fuel in the muscles to fire the muscle fibers. When glycogen is depleted from the muscle cells during an intense activity, lactate acid is created as a temporary fuel. This acid burns oxygen at a faster rate which raises the hydrogen levels in the body and without oxygen to cleanse the muscle cells of the waste, the muscles begin to shut down. This means oxygen is your life support and carbs are your friends. Carbs are used in the process of creating ATP. This means the more carbs and oxygen in the blood and muscles, the more ATP or fuel is available for the muscles during performance.

If oxygen is important to cleanse your system of hydrogen to prevent the slow down of muscle performance, then how do we load our system with an abundance of it? The answer is through hydration and alkalization. Hydration and alkalization can occur at the same time. There are machines that make water that is more alkaline than tap water and the oxygen molecule clusters are greater. These machines are called ionizers. The problem is these machines are very expensive. As an alternative I recommend that to hydrate you drink filtered tap water over bottled water. Tap water is more alkaline than bottled water. I also recommend that you drink as much water as possible. Also make sure that you are taking a multi-vitamin with it because more water moving through your system flushes more vitamins and minerals out, which are also critical for optimal muscle contraction and relaxation.

To get our muscles to start firing at an incredible rate of speed we need all the ATP we can get. To get more ATP for our fast twitch muscle fibers we need carbs so our body can break them down into glucose. This glucose becomes glycogen in the muscles. The glycogen converts to ATP. This is the best way to refuel the body but





make sure you take in moderate amounts of low glycemic sugars. Too much sugar can cause inflammation. This is an important part of recovery because another word for recovery is **refuel**.

Now that we know how to cleanse and refuel, we must now learn how to heal and rebuild. With pitching, the small muscles in the shoulder and arm take a lot of wear and tear. These muscles take longer to heal than the larger muscles like in the legs and core. This is why learning **3X Pitching**, which is a total body approach to pitching, will increase longevity by taking stress away from the small muscle groups and applying it to the large muscle groups. The reason the large muscle groups heal faster is because your body will spend more resources on healing itself when the large muscle groups have been damaged. When I say damaged, I mean to the point of fatigue. Your body sees fatigue in the large muscle groups as a bigger threat to itself than with the small muscle groups. This means the body dumps more growth hormone and testosterone in the system to speed up the **healing** process. This is why it is smart to do plyos or leg and core lifts after a game. Your body will then produce more hormones to heal the large muscles groups and this will also heal the small groups as well and speed the recovery of your shoulder post-game.

This is when the **rebuilding** process begins. During this window the body needs protein and lots of it, but glucose must be present or the body will use the protein to make glucose. It is also important to remember that the body needs oxygen to rebuild and protein is very acidic, which means your body will need even more oxygen unless you can keep your acid low by also eating alkaline based food with your protein. This is why I recommend that my athletes/pitchers eat at health food stores instead of body-builder smoothie shops.

For your body to make a complete recovery in a short amount of time, two days for relief pitchers and three to four days for starters, you must understand that you must first cleanse and refuel the body after a workout or game, and then you must heal and rebuild the body to be 100% for the new cycle. The **Ace Pitcher Handbook** and **TopVelocity.net** have a basic program of supplementation for recovery.

Icing

This has become a big topic on **TopVelocity.net** and I continue to receive questions on how and why to ice the arm after pitching or throwing the baseball. There is a lot of people who are getting information that icing stops the healing process, so therefore it does not help in recovery. This information is incorrect in my book because I have some very good evidence to back this up and because I always seemed to pay the price when I do not ice after throwing a lot of pitches.





In my career icing always shortened my recovery time. I did continue to test this therapy though to make sure of it's benefits. Mainly because it is a pain in the butt to ice your arm after ever game and I also was a little curious as to why we do this. If someone challenges your opinion on this argument, or you want a final answer, you need to look at the study that the American Journal of Sports Medicine has posted on Cryotherapy on rats. <http://ajs.sagepub.com/content/35/1/93.abstract> I know we are not rats but muscularly we are similar.

The American Journal of Sports Medicine states that Cryotherapy for 6 hours significantly restored diminished functional capillary density, markedly decreased elevated intramuscular pressure, reduced the number of adhering and invading granulocytes, and attenuated tissue damage. If this sounds Japanese to you, then I have given you some definitions here that should help you understand the results.

Definitions:

- **Cryotherapy** – is the local or general use of low temperatures in medical therapy or the removal of heat from a body part.
- **Intramuscular** – within the muscle.
- **Granulocytes** – category of white blood cells. White blood cells fight bacteria and fungi in the body.
- **Attenuated** – reduced in strength.

Here is my explanation in layman's terms.

The healing process is generally broken into three stages: **inflammation**, **proliferation**, and **repair**. The problem is prolonged or intense inflammation can cause cellular damage. This is what icing will prevent from happening if you ice within 48 hours of the injury or overuse of the muscle. Icing will then prevent further damage of the soft muscle tissue so the healing process can continue with minimal damage. Therefore icing supports the healing process and does not inhibit it.

** Before this book I also wrote an article in response to something that Dick Mill's posted on icing. He is probably the one who started the roomer that icing is bad for healing. The information below talks about Dr. Meeusen's studies on prolonged icing. This is why I recommend icing for only 10-15 minutes at a time.*

A well known pitching coach online wrote an article about how pitchers are causing more damage than good when icing their arms. He said that He did some research that proves that icing the pitchers arm does not help the arm recover but actually slows down the recovery process. I just wonder where he got his research because he does not tell us. After reading his quote below it sounds like he got it from Dr Seuss.





His Quote:

You see what happens when ice is initially administered is it brings blood to the site where it is applied, for the pitcher to the shoulder or elbow. And blood is good because it provides healing. However, as the ice stays on the blood can no longer get into the area so after a few minutes of icing the area is prevented from beginning the natural healing process. Icing stops an immune response which is healing.

This is a perfect example why you should NOT get all your information from one source. This Coach has definitely let his ego get the best of him here. All you have to do is search the web for medical websites documenting studies and articles on icing for injury or cryotherapy. In my career, I heard it through the grapevine that icing may not be good for pitchers but out of all the Doctors and Physical therapists I went through, during my five years of hell after rotator cuff surgery, I never once received any information that could back this up.

After reading this Coaches article on icing, I then took some time to research the web and I found several websites reference the work of Dr. Meeusen from Antwerp, where I played some professional baseball. He based his life study around icing as a means to help heal a damaged muscle. His documentation describes how ice can be effective and where it can cause problems.



When body tissues are cooled, nerve cells in the chilled area initially force adjacent blood vessels to constrict, leading to a marked reduction in blood flow to that part of the body. However, if the temperature of the affected area continues to drop, nerve activity is depressed and the blood vessels begin to open up, flooding the injured tissues with blood, even though cold is still being applied. This flood-of-blood (Hunting effect) is the human body's reflex reaction to thwart severe cold injury in a body part subjected to chilling stress.

Dr. Meeusen's studies showed that icing initially stops the swelling and blood flow of the damaged blood vessels into the local muscle tissue but after a period of 10 minutes it can begin to have an opposite effect to the area. His documentation continues to state this damage continues on to another important system of healing.



Lymphatic Vessels: Prolonged ice application can cause lymphatic vessels (which ordinarily help carry excess tissue fluids back into the cardiovascular system) to increase in permeability. This causes large amounts of fluid to pour from the lymphatics "the wrong way" into the injured area, increasing local swelling and pressure, potentially contributing to greater pain. If icing goes on too long, the lymphatic vessels can actually be nearly obliterated, losing all





3X RECOVERY

of their fluid to surrounding tissues.

The lesson here is NOT that icing is bad. What we have learned is that icing is effective initially but begins to cause problems after about 10 minutes. Read the description below for the proper way to ice the arm after a game to help aid the healing process.



Ice the elbow or shoulder region for 10 minutes immediately after pitching (DO NOT PUT ICE ON ULNAR NEVER), remove the ice for about 30 minutes, and then reapply it for 10 additional minutes. Repeat this cycle of about two 10-minute icings per hour as often as desired, based on how many pitches thrown, during the first 24 to 48 hours after pitching.





3X INJURY PREVENTION





Overuse has been considered the primary factor for most pitching injuries.

Performing the same motion over and over again leads to what the strength and conditioning and medical science world calls *Pattern Overload*. This is when the body uses load sharing to reduce the stress on the muscle group that is being overused. This causes dysfunctional motor coordination and creates instability in the joint which leads to poor mechanics and eventually injury.

Symptoms of *Pattern Overload* for Pitchers

If you are a pitcher who is experiencing these issues then it is possible that you could be suffering from *Pattern Overload*:

1. The Loss of range of motion in your throwing arm.
2. Your coach is telling you that you are not getting enough arm extension.
3. You are struggling with throwing strikes.
4. When you lift weights your throwing arm is weaker than your non-throwing arm.
5. When you throw, your shoulder pops and clicks and has pain in certain positions.

Pitching *Pattern Overload*

If you have never heard of *Pattern Overload* then you need to stop what you are doing and study this condition because it could end your pitching career. In layman's terms this condition occurs when the same pattern is repeated over and over again, like when throwing a baseball. What happens is the rotator cuff muscles begin to fatigue, the larger muscles of the shoulder, chest and back start to take over the joints movements. This not only changes mechanics but it creates instability in the joint. Instead of the joint rotating efficiently, it then begins to rotate off its axis. If the pattern continues than this can lead to the dislocation of the joint or the joint pulling away from its capsule. This would be like pulling a can from a six pack and then trying to stick it back into the plastic ring that held it in place. It doesn't work because the ring has been overstretch and is now bigger than the rim of the can. When this occurs, muscle and tendon/ligament damage is likely to occur which could lead to serious injury.

Pattern Overload is also detrimental to accuracy because of the loss of stability in the joint, the brain begins to loss control of the joint because of a proprioceptive deficit. This would be like changing the angle of the Axel on a remote control car. When





3X INJURY PREVENTION

you use the remote control to tell the car to turn right, it will over turn now because the Axel is not in its original position when the remote or brain was programed. This would be the same issue for a pitcher who is trying to hit the outside part of the plate but he continues to miss and miss.

How to recover from *Pattern Overload*?

If *Pattern Overload* leads to major muscle or tendon/ligament damage then surgery will be necessary and the joint will never be the same. If muscle or tendon/ligament damage isn't as serious then rest and the termination of the pattern causing the issue is the first step. Here is the rest times for muscle or tendon/ligament damage.



Muscle Tissue: Strains and minor tears heal quite quickly. This is predominantly due to the fact that muscle has an ample blood supply. Research shows only 7 days after a muscle strain, strength levels are 92.5% of maximum.

Ligaments and Tendons: It's generally accepted that there is little, if any, re-generation of these tissues once injured. The healing times of ligaments and tendons follow the natural, four phase progression of scar tissue development and maturation. The inflammation, granulation and fibroblastic phases begin within 24 hours, with wound closure happening in 5-8 days. The final stage, maturation, lasts between six months and one year. The scar is most responsive to stretch and remodeling for 8-10 weeks, and scar tissue shrinkage completes itself between 6 months and 1 year. Healing times for tendonitis will vary depending on how long it takes to identify the etiology of the problem!

http://www.t-nation.com/free_online_article/sports_body_training_performance/pattern_overload_part_1

Once you have given the joint the proper time to rest and recover from the *Pattern Overload* and there is no more pain then it is critical that you build stability in the joint. This is when you must use a joint integrity program to strengthen the rotator cuff and rebuild integrity in the joint.

Contraindicated Training

Studies have shown that most machine exercises in weight training facilities can enhance *Pattern Overload*. If a machine is putting you through the same movement where the path of the movement is not changing then this is promoting *Pattern Overload*. This is why these studies suggest Free Weight Training over Machine Training. When an athlete performs a lift with a free weight the athlete never takes the same path of movement through the exercise. This has to do with the brain controlling the movement to prevent *Pattern Overload*. It has been proven that no athlete ever takes





the same path during a free weight lift or exercise. Pitchers are always working against the effects of *Pattern Overload*. This is why they must avoid any type of machine training on the throwing arm especially in-season. It is also important to avoid any type of heavy loads on the throwing arm if a pitcher is suffering from *Pattern Overload*. Throwing heavy loads on the unstable joint will either force the larger muscles to take over more control of the joint and continue the detrimental effects of *Pattern Overload* or it will damage and injure the joint. This is why a Pitcher should not train with heavy loads in-season when *Pattern Overload* is most common.

If you are experiencing symptoms of *Pattern Overload* you must stop the pattern immediately and rest. If there is pain, I recommend you see a sports medicine doctor. Once you are cleared and rested, you must start the joint integrity program in the **Ace Pitcher Handbook**.

Poor Mechanics

Another major factor to pitching injury is pitching mechanics or technique. This means you not only need to have efficient and effective pitching mechanics but also you must have good technique when training to help prevent injury.

The most important component of the pitching delivery that has the biggest effect on preventing injury is hip to shoulder separation at front foot strike. Jordana Bieze reported in the June 2004 issue of *Biomechanics* that collegiate, high school, and youth pitchers rotate less than 15% of their way through the pitching motion. Rotating too early can produce added strain to the arm and shoulder. The majority of young pitchers do not understand, or know how to implement, optimal hip to shoulder separation into their deliveries. This means they open their shoulders before front foot strike. This not only destroys velocity but it can eventually destroy your arm. If the shoulders do not remain closed until front foot strike, then arm drag occurs. This is when external rotation is limited and the arm drags and pulls across the body. This puts unnecessary amounts of resistance through the forearm, bicep and shoulder.

When it comes to training, your lifting technique is just as important in preventing injury as your pitching mechanics. This is why I recommend using a strength and conditioning program that has been developed by a certified strength and conditioning coach. This way you know that the program uses lifts and exercises that must be performed with proper technique. This will help you feel confident pushing your limits without the fear of injury. In today's game there are programs out there that use exercise and lifts that focus more on the challenge of the movement than the technique. I would avoid these programs until you have built your base in the weight room through good technique.





The rumors that weight training has more injuries than regular sports is totally untrue. The famous Dr. Garhammer put together a study on sports injuries in a response to this rumor. He found that based on 100 participant hours in school sports, weight training had the least amount of injuries out of all the school sports. This should give you the confidence to start a weight training program but remember technique must never be sacrificed for weight.

Poor Physical Fitness

This is also a major factor to injury prevention. Poor physical fitness will enhance the effects of *Pattern Overload* along with poor pitching mechanics. This is why I am such a big advocate of physical fitness, just like Bob Feller was back in 30's, Nolan Ryan back in the 70's-90's and most power pitchers of today.

Poor physical fitness will enhance *Pattern Overload* because you are not rebuilding joint integrity and you also are not distributing the pitching workload throughout the body due to weak leg and core strength. This means if you have poor core and leg strength then your arm takes on most of the workload. You will find that most of your mechanical flaws are strength related. Good strength and conditioning program can have as much of an effect on your mechanics than your body movements. This means improved physical fitness will not only protect the joints but it will promote better mechanics which is a double whammy for preventing injury.

What if I get hurt?

Injury is not the end of the world. It usually is a wake up call. It tells you that you were either not working hard enough or you were working hard but not smart enough.

An injury forces you to take a step back and evaluate the situation. If done correctly this could be a pivotal time in your career that becomes a major stepping stone towards your success.

The best way to look at injury in your career is that you should avoid it at all cost by listening to your body and educating yourself as much as you are pushing your limits. If injury takes you by surprise one day then understand that tomorrow is another day and that this will make you a stronger and better person when you overcome then injury. With this attitude and understanding injury should never be a fear in your mind.





3X MINDSET





This is the most important section of this book. If you do not read this section, then this entire approach to pitching has been a total waste of your time.

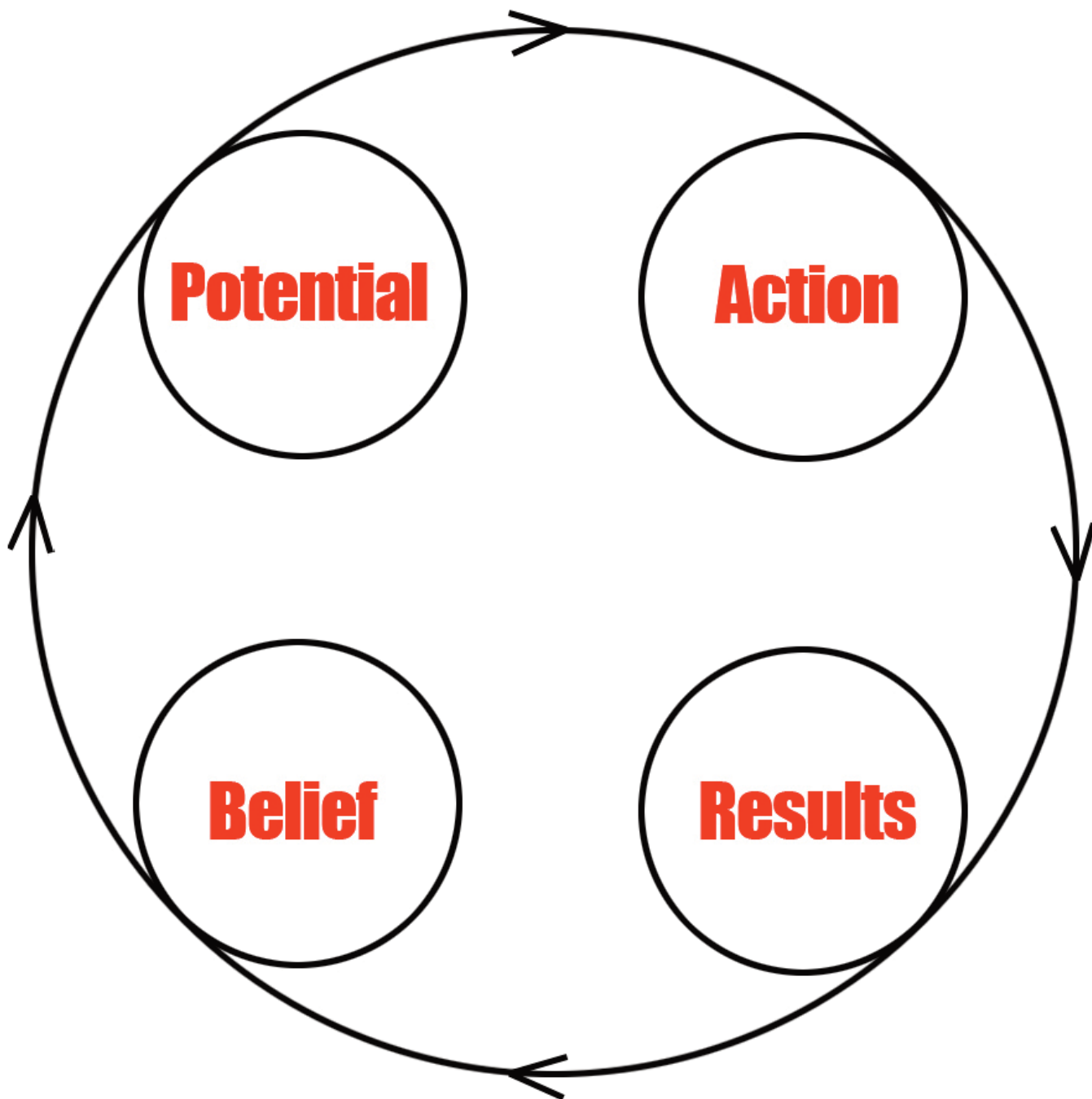
I did not discover this approach to pitching and develop the training program without first getting my mindset organized and certain. The day the 5th and final medical professional told me I would never pitch again, I experienced a serious low in my life. I was 18 years old and I thought my life was over. This was the most significant moment of my life because that night I went from a heavy depression to discovering a certainty that I didn't know I had. After I had my last doctors visit and got the news, I was visiting a public high school to see a theater performance that my Mother was directing for the high school. I sat in the audience and soaked in my depressive state. At intermission the lights came on and I looked up above the stage to find a saying written across the wall. It said, "Where there is a Will, there is a Way." Reading this saying was like hearing Gods voice speaking to me. Who knows, it could have been him. I had seen this saying hundreds of times but I never truly understood the meaning until that moment. It was telling me or God was telling me, that if I can muster up the Will, then God will show me the Way. I said to God if that is all you need from me is a Will to play the game that I love, then I am certain this is going to happen. The moment didn't end here. During the theater performance, in the other room was the gym and there was a basketball game going on. The Referee was a friend of mine who I looked up to because he was about 5 years older than me and he had just signed a Major League Contract to pitch for the Royals. He saw me and came over to me. I told him my situation and he gave me encouragement to never give up. He said, if you want it bad enough, it will happen. I went home that night with a drive of energy I had never experienced in my life. I was now certain of my success. The only regrets I have today is that I didn't set my goals high enough. I was certain I would play again and throw hard again because that is what the Doctors said I wouldn't be able to do. If I would have said I would also play Major League Baseball, who knows what would have happened.

It is important that you make the same commitment in your life to your goals and dreams. Especially, if you are going to spend your money to learn a new approach to pitching like with **3X Pitching**. It isn't enough to buy the program and talk about it. You must make it happen. More importantly you must be certain it will happen. I am going to steal this last and final section of the book from the legendary motivator Tony Robbins. He hates to be called a motivator because he is a lot more than just a motivator. If you do not know who he is, then look him up. This last part here is his Holy Grail to success or failure. I want you to use this model to help you find your own certainty in life.





The Holy Grail



Notice the vortex and the four circles. When we meet a challenge in life we go into that challenge with our mind and body's **Potential (First circle)**. With that potential we take **Action (Second circle)** and with that action we are then given a **Result (Third Circle)**. With this result we then establish a **Belief of our self (Fourth circle)**. This belief then influences are potential, and then changes our action and produces a different result and now we are back to establishing another belief of ourself. This spiral continues on and on and on forever. Let's put in an example so you can truly





understand its value. Let's say you are trying out for a team. Before the tryout you play a pickup game with some friends to get yourself ready for the tryout. You go into the game with your potential to perform and you take action. The result is you lose the game and you performed poorly. You then go home with a belief that you are not ready for the tryout. The tryout comes that week and you still have the belief that you are not ready. This now affects your potential which sets you up to take little action during the tryout and in return you perform poorly again and now this confirms your belief that you do suck! Then your next challenge comes along a few days later with school and you continue to spiral down into a shell of our original self. This vortex is now like a cancer, slowly destroying you. The good news is this vortex can also have the opposite affect on you, spiraling up towards success. This is why the rich get richer and the poor get poorer. Let's put together a positive example of the Holy Grail. Let's use the same situation with the tryout. You go into the practice game with your friends with your potential. You take lots of action. The result is you win the game and you gave a good performance. Now your belief of yourself is up and ready for the tryout. You go to the tryout with your new potential and you take even more action. The result is you make the team and the coach even complements your performance. You now establish a belief about yourself that you really are a stud and will play Major League Ball one day. The vortex continues to spiral upward towards your goals and you continue to experience success.

Before you run off and test out the Holy Grail on your next challenge, you must know how to change the vortex to spiral up towards success. Of course you can just add more action or better your beliefs about yourself but this doesn't always do the trick. The key to the Holy Grail is called **Certainty**. This is more than just a belief in yourself. It is establishing an irrevocable desired result. This means you must not only believe you are going to make the team but you must be certain you are going to make the team. This is not an associate position. You must know deep down inside you that things are going to change and you will do whatever it takes to provoke this change. This is why most people fail in life. They take an associate position and do not commit and follow through. If you are not certain that you are going to reach your velocity goals, then **3X Pitching** and the **Ace Pitcher Handbook** will not help you. If you are determined to throw 90+mph and all you need is the guidance, then **3X Pitching** and the **Ace Pitcher Handbook** is your Holy Grail. Be certain you have the Will to succeed, and then God will show you the Way! If it can happen to me then it can happen to you.





3X PROGRAMS





Pitching Analysis

Now that you have a full understanding of **3X Pitching** and the 3X Mechanics, you now need to start incorporating these mechanics into your delivery. To do this you will need a trained eye to analyze your delivery and compare it to the 3X components. Once your delivery has been analyzed and you are aware of what corrections must be made in your delivery to achieve the 3X components, then you can start with the **Ace Pitcher Handbook** to start developing the muscle memory and power necessary to achieve the 3X Pitching Mechanics and start moving towards your velocity goals.

Direct message me on social media to receive a FREE video analysis. You can also view other pitcher analysis' on the TopVelocity YouTube Channel.



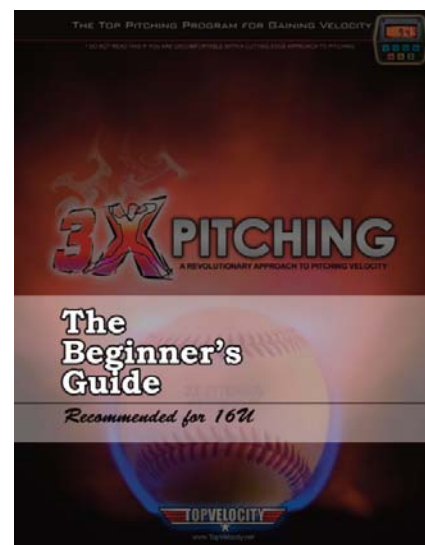


Beginner's Guide to 3X Pitching

It is here to teach the young or beginner pitcher the revolutionary approach to pitching called **3X Pitching**. This guide will take you through all of the beginning stages of **3X Pitching**, so when you finish this book, you are prepared to take it to the next level with the **3X Pitching Book** and the **Ace Pitcher Handbook**.

What will you learn from this Guide?

1. How to avoid starting on the wrong foot.
2. The basics of 3X Pitching.
3. How to survive pitching young.
4. How to avoid youth pitching injuries.
5. 3X mechanics for the beginner.
6. The 3X beginner drills.
7. The 3X beginner training.
8. Taking it to the next level and much more!



IMPORTANT NOTICE: You must open your mind and be able to think out of the box from this point on!

This approach to pitching is revolutionary because it goes against conventional wisdom. It goes against most of the language used to coach this position for the past hundred years. If you have a hard time opening your mind to different perspectives, then this guide will not help you. More than likely it could really upset you. If you can open your mind to an out of the box approach to pitching then this guide will live in your back pocket.



"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change." - Charles Darwin quote

This is one of my favorite Darwin quotes and it is perfect for the athlete. Your success as an athlete is based around your ability to change and adapt. If you believe that this is true then I should have your undivided attention and you will reach your velocity goals at the completion of this program.

The Beginner's Guide includes an Unlimited access to the Instructional Videos to all the drills, exercises and lifts.

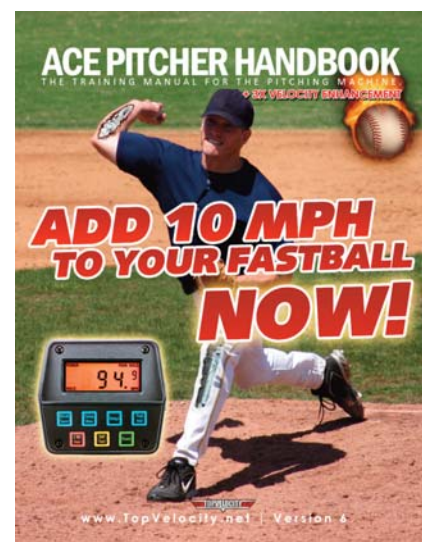




Ace Pitcher Handbook

This handbook is the training program that I discovered and used to overcome shoulder surgery, pitch in professional baseball and top out at 94 MPH after doctors told me I would never pitch again. This is the training guide to **3X Pitching**.

The **Ace Pitcher Handbook** has over 10 years of experience and knowledge of what it takes to increase the level of your game to that of a professional athlete. This handbook focuses on Velocity because Velocity is what gets your foot in the door. It is the single component that all scouts use to assess the value of a pitcher.



Why waste your time using anything else to increase your performance than a handbook that has all of the answers and the programs listed in the manual are what I used to beat all of the odds? If you are someone who loves the game but needs some more juice in your fastball, then this is the answer you have been looking for.

What is Included?

1. 3X Velocity Mechanics.
2. 3X Velocity System.
3. 3X Pitching Guidelines.
4. Fusion Strength and Conditioning system developed by Brent Pourciau.
5. Nutritional Guidelines (What supplements pitchers should be taking).
6. **Redemption codes to all the Instructional Videos for learning the throwing and training programs at www.BaseballVideoStore.com.**

Why should you use this Handbook?

- You have a short window in your career to prove yourself and this handbook will give you an edge that your competitors will not have.
- You will gain 5-10 mph on your fastball if you complete the entire handbook with all of its training programs and drills.
- This handbook will give you an understanding of pitching that most coaches do not have.
- This handbook will turn you into a pitcher that every coach wants and every hitter hates.

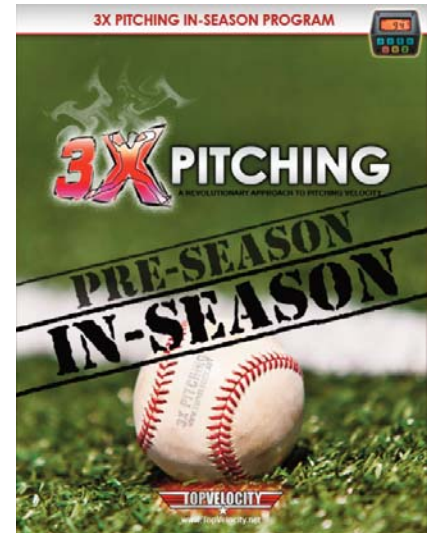




3X Pre and In-season Programs

Take Your Velocity Gains into the Season!

The pre and in-season is here and you are ready to take your velocity gains from the **3X Pitching Velocity program** into the new season. The 3X Pre and In-Season Programs was developed to not only take your velocity gains from your off-season into your in-season, but to also help reduce velocity inconsistencies all year long. If your new season is near, or you want to be ready for it, then you need the top pre and in-season pitching programs on the web, NOW!



Why You Need a Pre and In-Season Program?

If you just walk into your pre-season without a new program to take you from your off-season into your in-season then everything that you have worked for could be completely lost, in only a few weeks. It isn't enough to have just developed the motor coordination around above average velocity in the off-season. If you want to keep this velocity for the entire season, then you need to continue to define and refine this motor coordination along with maintaining your power production. The 3X Pre and In-Season program was designed around this same format for success. Don't wait any longer! Your new season will be here before you know it! Get the 3X Pre and In-Season program today and prepare yourself for the best season of your career.

What to Expect from the Pre and In-Season Programs?

You will not only reduce velocity inconsistency but you will also gain some extra velocity moving into the new season. Along with this, the 3X Pre and In-Season programs will help speed your recovery while preparing you for the rigors of a long season. Another key component to the 3X Pre and In-Season programs is injury prevention. Most pitching careers in this game are cut short because of a career ending injury, these programs were developed to help you prepare for any curveballs that this season may throw at you.

To learn more about the 3X Pre and In-Season programs check out the link below:

www.TopVelocity.net/products/

