



# PERFORMANCE BASEBALL/SOFTBALL CONDITIONING

A NEWSLETTER DEDICATED TO IMPROVING BASEBALL AND SOFTBALL PLAYERS

Volume 17, Number 4

## How to Make T-5 Testing Fit Your Program Part 2

Here is the 2nd part of my editorial from last issue. Click [HERE](#) to read.

**To Review:** Testing in its simplest form is to find out where your athletes are physically and what they need to develop and the effectiveness of your conditioning program. Just as in conditioning, where no two programs are alike so too is testing unique to each program. It has to fit your needs or as we say "fits to a T" then it's perfect for your purpose and no one else.

### Testing Defined

Testing is an endless continuum:

TEST>ANALYZE DATA TO ID ATHLETE'S NEEDS>ESTABLISH AND CONDUCT PROGRAM, ADDRESSING INDIVIDUAL NEEDS>RETEST TO EVALUATE PROGRAM EFFECTIVENESS> ADJUST PROGRAM>REPEAT...

**Management of Data** - With the advent of the data e-explosion, countless devices are measuring a wealth of meaningful information that has to be managed to be applied. With constant data collection, the line between testing as described in our testing continuum and 24/7 number collection becomes blurred. What is a test and what is information that provide physical activity information? It is important for the coach to establish a policy that differentiates this to insure testing is done for the right reasons, measuring athletic progress and the effectiveness of your conditioning program. Bottom line, everything must be put into context.

**Individual Response to Stimulus** - This reflects back again to our testing continuum "addressing individual needs". Tests results are specific to the individual athlete and their response to your conditioning. Program adjustments need to be made individually. The more data that is collected over time the more meaningful the test results become to that individual athlete and allows the coach to compare results over time creating more trust in the conditioning program. Everyone reacts differently to the same stimulus. Therefore data has to be collected and individualized over time. The longer time data is collected, the more meaningful.

**Parents as Recovery Coaches** - Much of today's data is applied to see the freshness and recovery level of the athlete. We have talked about the importance of managing the data so it can be meaningful. But it is the parent who has the greatest knowledge of how their child is feeling. They have collected data over a lifetime and can relate the level of readiness of their child. Coaches should tap into this all important resource and create a positive relationship with parents.

**Plan of Action** - Armed with these basic considerations you are ready to embark on establishing a testing program that fits your specific situation to a T.

Something to Think About

Ken Kontor, Publisher

## WHAT'S INSIDE?



Library LINKS - From the "Fit"-to-a-T" 7-T System of Program Design Library

The Changing Baseball Strength and Conditioning Setting with Technology: Putting Numbers on Everything  
*Esteban Doria*



Adaptation in Strength and Conditioning for Today's Professional Baseball Setting  
*Carl Kochan*

A Look Back at the Favorite Exercises of the Stars



Reading Research: Lower Extremity Strength and Recovery Time in Youth Baseball Pitchers: A Pilot Study  
*Livingston, Jennifer L. PhD, ATC1; Tavoukjian, Nicholas M. MS, ATC, CSCS, TSAC-F2*



Reading Research: A New Method for the Evaluation and Prediction of Base Stealing Performance  
*Bricker, Joshua C.; Bailey, Christopher A.; Driggers, Austin R.; McNis, Timothy C.; Alami, Arya*



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## Library LINKS - From the "Fit"-to-a-T" 7-T System of Program Design Library

### **T-2&T-4** Time & Teaching

*Pre-game Movement Prep, Nate Shaw*

#### Learn

Baseball is incredibly complex and training for it is like training for a decathlon. Fatigue is difficult to predict, there are many options for warming up, over-doing it is a common risk and there is an immense variety of ideas and techniques that can be successful. Recovery and efficiency are high value targets. Experienced coaches know when to push and when to back off and are able to understand proper function better because they have observed more dysfunction. Whatever a coach decides to do, he needs to insure that there is proper rationale to back it up. The warm up/general prep concepts mentioned here make a great place to start.

#### Presented

With our movement prep, we set out to accomplish three things:

1. facilitate the glutes
2. reposition the ribcage
3. facilitate the diaphragm.

[Click HERE to Read Now!](#)

### **T-4** Teaching

*Movement Training Systems Present: Avoiding the False Step the Real 1st Step in Speed Training, Thomas Sheehan*

#### Learn: What is a False Step?

A false step is an inefficient initial movement often in an unintended direction, e.g., forward to go backward, backward to go forward, or lateral to go forward or backward. It is a movement of the

Symbols to Success  
Articles preceded by:

**BGN** indicate author believes content is for beginning-level athletes with training age of 0 to 2 years.

**INT** indicates author believes content is for sport (intermediate)-level athletes with training age of 2 to 4 years.

**ADV** indicates author believes content is for expert-level athletes with training age of over 4 years.

NOTE: Training age year is continuous year-round conditioning beyond just playing baseball/softball.

**R** following articles indicates the content has been reviewed by the editorial board.

**O** following articles indicates the content is the sole opinion of the author.

Article preceded by a T + a number 1-7 indicate the article is relevant to one or more T's in our 7-T system of program design.

**T-1**= Training Age (see above)/History

**T-2**= Time

**T-3**= Tools

**T-4**= Teaching

**T-5**=Testing

**T-6**=Total Workload

**T-7**=Team Position

To find out more about Fit to a T program go to:

[www.performancecondition.com/ultimate-conditioning-library/baseball](http://www.performancecondition.com/ultimate-conditioning-library/baseball)

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and  
NATIONAL FASTPITCH COACHES  
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body without gaining ground in the direction you are trying to go. It occurs when you are off balance prior to your first step, requiring a weight shift to regain balance before first step is made.

**Presented: How Do You Correct It?**

A balanced body position and initializing movement in the feet are the two keys to efficient movement and eliminating false steps. Balanced body position includes the chest over your feet, hips back and down in a ¼ squat position, weight centered on the mid foot. Hips must be centered over your feet on each step or you will not gain ground in a balanced position, setting you up for inefficient movement. Initializing movement with a push through the foot results in parallel movement of the opposite hip – in other words, the opposite hip releases. This keeps you in a balanced position, ready for your next movement. If movement is not initialized from the foot, the movement starts with a lifting of the leg, which results in less force through the ground. SUMMARY SENTENCE Balance and stability work as partners to create the support necessary for efficient movement.

**The Movement Training System**

The movement training system we use conditions the body to create an on-balanced condition. This series of movement drills emphasizes pushing through the foot to move rather than lifting the leg or moving the upper body first.

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**Total Workload**

*Arm/Shoulder/Elbow Health and Injury Prevention - A Strength and Conditioning Coach's Perspective, Carl Kochan*

**Questions Answered**

- Strength and conditioning involves the integration, not isolation, of the muscles of the body to achieve improved performance and prevent injury. How does this integration work in arm injury prevention for the pitcher, more specifically, avoiding UCL tears?
- From a strength and conditioning perspective, what do you feel contributes to an UCL injury in young players?
- These are excellent holistic considerations. It starts with mechanics, which is the pitching coach's domain. How do you see the strength coach interacting and communicating with the pitching coach to prevent injury?
- Let's talk about the role of good posture and avoiding muscle compensation that result from poor posture and muscle function. How do you see the relationship of good posture and good pitching mechanics and where do you start?
- Let's talk about volume of pitching, implementing a strength and conditioning program and their relationship. How does it fit?
- Let's talk about what we call T-6 Total Work Load, which combines all activity on the field, in the gym and other sports, private lessons and training. What are the considerations here?
- What would be basic exercises you would select for young athletes, and how do they fit in? This is T-1 Training Age in our "Fit-to-a-T" program design model.
- Let's talk about our T-2 Time. How would you fit these in based on a periodization model, annual to weekly?
- How can the parent have the confidence that their child is doing the exercise right and that it is taught correctly, T-4 Teaching of our "Fit-to-a-T" program design model? This means that the exercises are done correctly when they are loaded.
- How do these exercises fit into T-6 Total Work Load, and how can more advanced exercises be introduced as the athlete matures?

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**Total Workload**

**Creating Good Sleep/Recovery Habits on the Road, Dave Ellis, RD**

**Learn**

One of the biggest problems is the lack of quality rest that occurs on the road. For many athletes not sleeping in their own beds can slow recovery as the quantity and quality of their rest is compromised. When we get to the deepest phases of rest (called non-REM sleep) some valuable recovery occurs as we naturally pulse growth hormone. Every time these athletes compromise the quality of their rest by 90 minutes they miss a cycle of growth hormone induced recovery that in time takes it's toll as this sleep-recovery debt accumulates.

## Presented

- Rate the quality of your rest (1-5 w/ 5 being the best).
- Did you eat every four hours and did the meals contain fresh produce for immune health, fiber rich starch for energy and diverse sources of protein (animal, dairy and vegetable) to facilitate tissue remodeling?
- Did you drink 3-4 liters of water/sports drink over the course of the day's activity?
- Reflect on your performance and competitive drive on the field for the day and your mood when dealing with teammates and coaches.

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## T-1 Training Age/History

*Lesson For Youth Baseball: Introducing Young Players to Strength Training*, Rachel Balkovec

## Questions Answered

- What is your overview to introducing young high school players to strength training?
- Let's talk about the mentality of loading. For the male baseball player, weight training is a “macho” activity. Adding load is one of the biggest reasons for technique breakdown in the weight room, which can eventually cause injury. How do you approach this issue?
- I believe in the percentile of improvement, not how much as been done. A people may vertically jump 40 inches and get rewarded as being the best. Or you can reward percentage of improvement—10%, for example. The reward goes to the 10% improvement, not the 40” max. What is your opinion of this method?
- I would like to follow up on something you said in a previous article. Many athletes coming into the major league farm system lack basic movement skills. These individuals are not allowed to strength train until they are proficient at movement skill, then they can come into the weight room, start lifting, and learn proper exercise techniques before they begin to load. How do you handle a kid with this approach?
- How do you deal with selling strength training, but doing it correctly?
- When should I start strength training a young athlete?

[Click HERE to Read Now!](#)



## T-6 Total Workload

*Baseball/Softball Conditioning—The 100% Intensity Solution*, Bob Alejo

## Learn: “Fatigue is Volume Based Not Intensity Based.”

To start a discussion on conditioning for baseball/softball it's important to understand conditioning. For pro baseball and 200 games between March 1st and October 31st (potentially) is a lot different than a high school baseball/softball schedule which has 18 to 20 games during a school year and maybe 30-50 games during the summer. Baseball/softball are not considered metabolic sports so the question becomes what is the role or importance of conditioning?

## Presented: Intensity and Injury Prevention

In my many years in baseball one of the things that I'm convinced of is that players train enough (volume) but not hard enough (intensity). This holds true not only for conditioning on the field but in the weight room as well and also on bikes and other apparatus.

## Sprinting and Striding

Each of these activities is done at 100 percent but the speed of the stride is only 75 to 80 percent. The reason for this difference is that the stride is an elongated sprint stride even though total effort is there. Overextension of the stride dictates that maximum speed cannot be reached.

## Recovery from High Intensity Training

Many coaches feel that by going at full speed in training may make the players tired for the game or may lead to some form of overtraining, especially considering the volume of games played at the MLB level. A good balance of intensity and recovery is something I've learned through experience of almost 30 years conditioning athletes.

### Program Considerations

A typical program might be one intense day with a day off conditioning every other day.

### Strength Training Considerations

The key here is individualization of the workout and again, low volume. We don't do conditioning and strength training back to back.

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# Members' Forum

## The Changing Baseball Strength and Conditioning Setting with Technology: Putting Numbers on Everything

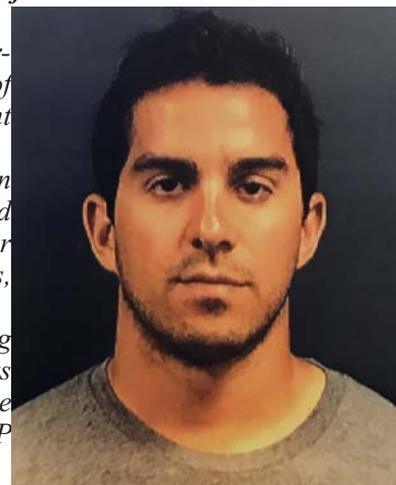
*With Esteban Doria, Houston Astros Sports Medicine and Performance*

*Esteban is working his second season on the Astros Sports Medicine and Performance staff. Last year, Doria assisted with the strength and conditioning efforts of the GCL Astros in West Palm Beach, FL. Prior to the Astros, Esteban was an Assistant Strength and Conditioning Coach at the University of Maryland from 2015 to 2017.*

*In 2 seasons with Terps baseball, Doria assisted in developing 9 selections in the MLB Amateur Draft, 3 All-Americans, 2 Big-Ten Conference Players of the Year, and 7 All-Conference selections. The Terps' power numbers and stolen bases also saw major improvements with Esteban's assistance, going from 42 to 67 HR's and 28 to 101 SB's, respectively.*

*Prior to UMD, Esteban worked for the St. Louis Cardinals organization. During his tenure with the Cardinals, Esteban coordinated the strength and conditioning efforts of the GCL Cardinals, assisting the team to a GCL East Division championship, a league championship semi-final appearance, and aiding in the development of league MVP Allen Cordoba.*

*Esteban received his Master's degree in Exercise Physiology from Louisiana*



Esteban Doria

State University and holds certifications from the National Strength and Conditioning Association, USA Weightlifting, Selective Functional Movement Assessments, and Functional Movement Screens.

**PC: How is technology changing in the way we condition the baseball athlete?**

**ED:** Much of this was introduced in the book *Money Ball*. It introduced the concept of metrics and analytics in baseball, and how managers and coaches are using these to gain an advantage, whether it be dissecting a player's weaknesses. It addresses what match-ups are best in certain situations, and it has gained in popularity.

It has made its way into strength and conditioning, where there is “old school” thinking that is now being retooled to help teams win. How can technology be utilized in strength and conditioning and the athlete’s development? The new wisdom lies in finding objective data and using it in a weight room setting. For example, running mechanics is now being introduced into the upper levels of baseball. The Dodgers, Red Sox, Giants, and Astros are finding ways to put numbers on everything. Strength and conditioning has the subcategories of mobility, nutrition, power output, sprint speed, and throwing velocity—where everyone is finding ways to quantify them into a metric form.

How can we quickly analyze, utilize, develop, and scout these in our athletes? The Astros examine the squat pattern and acceleration rate, rather than access strength subjectively like guessing a max of weight lifted potential. Our objective is to eliminate testing subjectivity and improve reliability. We want to streamline everything so the information is crystal clear, and this ability to measure progress is really exciting.



**PC: What is the challenge of gaining objective data and ensuring the data’s reliability? How do you make it manageable?**

**EB:** Baseball is an anaerobic sport with max power output. This sets the stage and gives us those key factors. As an organization, we are emerging with velocity-based training. We use different equipment, such as GymAware, to put numbers on how fast we move. GymAware accounts for such things as bar path or the recoil of a tension cord. It has a very easy-to-use software and can keep track of data on any mobile device. It has cloud storage for a lot of our information. We can concentrate on coaching rather than recording everything.

We also did research on what is involved in athletic performance considering max speed, max strength, strength endurance, etc. Research says that you must be within certain parameters of velocity to enhance those parameters so we can design our program based on this information. We look at where a player is, what his output is, and what he needs to work on to improve. It also allows us to track progress; this technology is great for allowing a coach to make alterations to a program taking into account over- or undertraining. We are excited about how it will help performance on a daily basis. In addition to GPS, we use Catapult and more organizations are using this system to measure player workload. It is more popular in football and soccer, but a few baseball teams use it but don't share the data in order to establish norms. We are in data-collection mode for this device. I think it will help in injury prevention in the long run, but the data must be managed to make it effective.

**PC: This requires you to collect your own data to make it meaningful and reliable so that conditioning is periodized to allow for recovery and freshness. That is amazing.**

**Let's talking testing. With constant data, testing is continuous based on the data results and the circumstances of how that data is collected. The “old school” way was to have testing days where the vertical jump, electronically times ten-yard dash, and pro-agility runs are administered to see where the athlete is at and measure the program effectiveness based on results. So we have two schools of testing. Where are you on this?**

**ED:** Doing some streamline assessment is important. You must be able to do a mobility screen to get an overall sense of where the athlete is. I think that a sixty-yard dash and a max squat using a five-RM protocol can be done, but there is always the risk of injury in those tests. The strength coach must be confident that the athlete uses good techniques. We strength coaches are never allowed to see what professional athletes can do for true maximum effort. A strength coach really should know what he can and cannot do based on his expertise and how well he knows the athletes.

The sixty-yard run is commonly done from home to second in baseball, but we think that the thirty-yard dash is more applicable. More often than not, the athlete runs from home to first. If you hit a ball in the gap, the player usually knows that he will reach second without an all-out sprint. If you are on first or third, analytics say you will be more likely to test the arm of the outfielder to second base or home, which is thirty yards. There is a very good chance the athlete will not run further than thirty yards in order to make a defensive play.

**PC: Baseball athletes’ privacy can become an issue. Is this a concern?**

**ED:** Yes. I think right now especially from double-A and beyond, agents understand that some of this data can be used against athletes in certain situations, so we have compliance issues with athletes. But it is also the strength coach's job to let the athlete know that all this information can be used to their benefit. We have statistical information that has proven what works. Being at, below, or above a number gives us information about the athlete and might indicate injury potential. We educate the players on what we found and what it means to them and their performance. This plays a major role in gaining a "buy-in" for the players. We also like to use it as a way to cultivate competition. If you have a veteran who is slipping, you can demonstrate that you have an athlete playing at a certain level. It shows the veteran they are regressing in some areas, and it might be the catalyst to light a fire under that older player to "reinvolve" himself at a higher conditioning level. It acts as a wake-up call because we all know we are replaceable.

The bottom line is that we preach to our guys that the information is to help them. We want them to stay healthy to be on the field and perform well. Whether is our swinging program and the metrics it provides or something else, all the numbers here should show them progress.

**PC: Let's address the seasonal considerations of the off- and in-season as it relates to data collection intensity. How do you differentiate between these two seasons?**

**ED:** The philosophy during the in-season is to keep them healthy and, if applicable, get them stronger, more explosive. There is a lot of travel involved, and nutrition is not always the best during the season. But we continue to maintain our data driven objectives—this includes coaches. We all want to ensure things are happening for players and the entire team. Holistically, the volume is lower, but the objectives are there. We still have to hit certain speed thresholds in hitting power thresholds or certain strength numbers, etc. The goal is injury prevention, but also to push the players a bit. This is where the Catapult and the ready system come into play.

There are geographical limitations in the off-season. We transition into online software to get the job done. This allows us constant communications with our athlete so we can always check on them, even if they are training abroad. It allows us to know, for example, if they don't have access to a certain piece of equipment, or if they suffer an injury. It allows us to make adjustments on the fly based on their level of communication with us. We want to work strength and power so as a result, intensity is higher as well as overall work volume to prepare for spring training. This whole process moves us away from the pen and paper in the form of an off-season packet. This method has flaws, such as measuring progress or even if they are doing the program or not. We can gain feedback and track their progress with the software. They can also alter a lift category. If the program calls for a squat (in the bilateral movement category), they receive options on replacing that exercise within that category if they don't have a squat rack or barbell.

Another off-season program that is gaining popularity in professional baseball are strength camps to create a place to lift. In 2014, there were maybe four or five of these types of camps; now there are more than a dozen. There is also the instructional league setting, which is like fall ball in the collegiate setting. Adding a strength camp is new and indicates a further emphasis on the importance of strength and conditioning. Some are done sporadically, others are three weeks long, and till others are multiple times during the off-season. Some do it before spring training to prep the athletes.

## *Editor's Note: Find out "What is Velocity Based Training"*

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Some organizations are bring in the athletes and put them up in a hotel.

**PC: How do personal trainers figure into the off-season?**

**ED:** At the end of the day, these are professional athletes are in charge of their own career. We try our best to get the athlete to buy into what we do. If a player wants to do a different program, we want the player to be open and honest with us. This allows us to be in contact with the personal trainer so we know what is going on with the athlete. The only thing that we emphasize is that when they come into spring training, they will be accessed according to our program progress. With the Astros, if you don't have the numbers, chances are you'll be called into the farm director's office for accountability. 

**More Information Please!** Contact Esteban at [edoria@astros.com](mailto:edoria@astros.com).

# Adaptation in Strength and Conditioning for Today's Professional Baseball Setting

*Carl Kochan, Major League Strength & Conditioning Coordinator, San Francisco Giants*

*Carl is in his sixth season as Major League strength and conditioning coach for the San Francisco Giants. Prior to 2012, he served in the minor leagues with the Giants' San Jose and Fresno affiliates for several seasons. Before joining San Francisco, Carl spent time working with minor league athletes with the Seattle Mariners (2006-2007) and the Boston Red Sox (2008). He has the following certifications:*

- Registered Strength & Conditioning Coach (RSCC) with the National Strength & Conditioning Association (NSCA)
- NSCA-Certified Strength & Conditioning Specialist (CSCS)
- NSCA-Certified Personal Trainer (CPT)
- National Academy of Sports Medicine (NASM) Performance Enhancement Specialist (PES)
- United States of America Weightlifting (USAW) Sport Performance Coach

***“You must increase stress to produce gains.”— Hans Selye***

*Adaptation is one of the base principles of strength and conditioning. It is based on stress. In professional baseball, adaptation through training has taken on an additional definition. The traditional approach, based on Hans Selye's work is adaptation to stress – response to overload – accomplished by the strength and conditioning program for the benefit of the athlete for over forty years.*

*The additional definition that has emerged, an adaptation to structure – response to structure – is accomplished by adapting how athletes are trained based on the administrative structure of each individual MLB team. Building a strength and conditioning program around an organizational or administrative structure poses many unique challenges for coaches across the league. This interview addresses how one strength coach has adapted. –Ken Kontor, Publisher*

**PC: How do you work with different position coaches and the team manager in today's professional environment?**

**CK:** There are different ebbs and flows in each of the organizational structures in baseball. How one group does it differs from another; it's not my position to say what system is right or wrong. In my opinion, constant communication between the various departments is the name of the game. As long as everybody understands and is working towards a common goal, whether it be the hitting or pitching coaches, defensive coaches, athletic training or the strength and conditioning group, communication and common focus are key.

How each organization approaches this is completely different. It comes down to how the manager wants the information and how it fits together. That could mean one line of communication with a particular coach or staff, and he could have several sources of information coming from different people. Then the manager has to make sense of it all and make the ultimate decision on what is going to happen.

**PC: Since you are who will ultimately be the decision-maker on the field for conditioning and results, how does the administration/structure speak to this process?**

**BK:** Every place is different. That being said, I think the fact that we play every day makes our sport different from the

other three professional sports. In football, readiness comes down to a Saturday or Sunday after a whole week of modifications to training load, nutrition, etc. In baseball, we play every day. If the organization wants us to take batting practice, we take batting practice. If they don't want to, we won't. The pitching coach may or may not have a bullpen day.

In summary, the skill stuff never stops. Success comes from working with the entire medical staff and the entire coaching staff on a plan of action for that day, or maybe the entire series. In San Francisco we play our night games at 7:15 at AT&T Park, so everybody has to ring a bell at 7:15. We have twenty-five guys on the roster with twelve to thirteen position players. We play in the National League where we double switch, so everyone has to be ready.

**PC: Do you think that the baseball strength and conditioning coach should ultimately be responsible for the entire strength and conditioning process?**

**CK:** Yes and no. Here is an example of what I mean: In undergraduate school, we learned about the three energy systems that pertain to the conditioning process. These systems can function independently, but also tend to work together in certain situations. We don't just completely shut one off and move on to the next. So when you ask this question, "Are we part of the process?" I completely believe we are, in conjunction with the medical staff.

However, we don't have the end all, be all process. We have to have the ability to work with the skills coaches, to work cohesively to make sure everyone is functioning on the same page. If we see some dysfunction from a hitting or throwing standpoint, how do we communicate this up and down the ladder so that everybody is speaking the same language? When we work with an athlete, we are able to make conscious adjustments to allow them to get back to the skill set that makes them very special. The buck doesn't stop with us. But we are a very important part of what steers the car, so to speak, for each athlete, and we manage that athlete accordingly as we go through the season. It's not the sole priority of the strength coach.

**PC: The strength coach usually spends the most time with the athletes. He is generally the person asking the player, "How are you doing?" each day. Depending on the answer, and knowing the athlete, a report is made to all those involved with conditioning and readiness. From there, collective recommendations can be made and reported to the skills coaches. Can you comment on this statement?**

**CK:** To put it simply, we hold a very influential role within our baseball organization. The pitching coaches work primarily with the pitchers, hitting coaches with the hitters, and so on. Everybody has their subgroup. Even from a medical standpoint, the physical therapist works with rehabbing players. The trainers work with their modalities to get players back on the field. What I mean by "influential" is that the strength coach works with every person on the roster, on a day-to-day basis. We have twenty-five guys to manage every day. This is where good communication, not just with the medical staff but your skill coaches, is vital. Situations are ever-evolving.

Case in point: The medical staff and I meet daily and walk through each person on the roster, looking at our plan of attack, what issues we see, and how to manage them. Our goal is to keep them performing at a high level on the field. Then we communicate our observations and plans to our skill coaches. When everybody is on the same page, it's great. But sometimes within an hour, everything you talked about has completely exploded and you have to start from square one again. Then the knowledge of your athlete, as well as knowing the day's goal and confidently making conscious adjustments, helps to manage the player and his performance. That way, when Bruce [Bochy] calls his number, he can perform and do his job.

**PC: This structure makes a lot of sense, and focuses on the important role of the strength and conditioning coach concerning the readiness of the players. Any additional comments on all this?**

**CK:** The term "readiness" has become popular in the last two to five years. When you think of readiness, it's thought of from a recovery standpoint. At 7:15, game time, recovery goes out the window. What makes a major league player special is their ability to perform at a high level on a day-to-day basis. A superstar player might only be functioning at eighty percent on a particular day, but his eighty percent is better than a lot of guys at one hundred percent. These players are special because they can play at a high level even if they lack the readiness.

The lack of readiness may stem from a lack of sleep, soreness, nutritional issues, a lack of swing in the cage, etc. No matter what their level of readiness is, they can still perform at a high level much more consistently than somebody else. Our job as a strength and conditioning staff is to work as an integrative unit, along with the medical staff and skills coaches, to have a player functioning at his highest level. Our job is to have players be "ready."



**PC: Can you speak to the idea of periodization as it relates to baseball and its variables versus a sport with a longer readiness cycles, like football?**

**CK:** I think the periodization principle is just that. If you want to hang your hat on one or two variables as it pertains to someone's readiness, I think you are going to miss the boat. Readiness is all-encompassing from game to game, day to day, and in some instances, hour by hour. What people don't understand is that these players are still people. I have a player who just welcomed his first child. As a new dad, is he going to be physically and mentally ready to hit a ninety-five mph fastball when he's only had three hours of sleep the night before? These players all have some X factor away from the field. Then we introduce the variable of, "Don't worry, you won't be sleeping in your own bed for the next twelve days on the road. Also, your eating patterns will differ."

Our job is to teach guys to make good decisions on a consistent basis, whether it be sleep, nutrition, or training, with the aim of accentuating some skill work on the field initiated by the hitting or pitching coaches. If you do this enough, they are going to learn what to do when they need it.

**PC: Can you speak to the role of the strength and conditioning staff as it relates to individualizing programs to the needs of each player?**

**CK:** We need to work to manage our athletes in conjunction with our medical staff and skills coaches. I think eight to twelve individuals working collectively will have more impact in making recommendations than just one person. You try to surround yourself with really smart people with experience from past situations. But the X factor is always the athlete himself. We can make all these great decisions and have a plan, but if you don't ask the athlete how he is feeling, that plan may totally contradict what the athlete is telling you.

Our job as strength coaches is to have a plan of attack for each athlete, starting with the old cliché, "How are you doing today?" I might get a response that is completely different than what I anticipated. But if I've armed myself with a plan for that day or that week based on a periodized structure, I can make changes based on what the staff is telling me, as well as what the athlete is telling me.

I think this is what makes a good strength and conditioning coach. With all the technology and application of sports science, you get great information. But at the end of the day it all comes down to what question you want answered. I like to keep it simple from that respect. 🤖

**More Information Please!** Contact Carl at [carlkochan@yahoo.com](mailto:carlkochan@yahoo.com).

# A Look Back at the Favorite Exercises of the Stars

From the Pages of Baseball/Softball- enjoy these favorite exercises of these MLB Stars. This series of features provides a small glimpse of a conditioning-related exercise that a star baseball player does to improve their performance. It should be understood that this is only a very small part of their formula for success. A developing player should always remember to set priorities based on their individual weaknesses and to establish their own "favorite exercises" to overcome these weaknesses.

**The Star: Joe Girardi, Catcher, New York Yankees**

**The Exercise: Pause Squats with Acceleration**

*Jeff Mangold, Conditioning Coach, New York Yankees*

## Why They Do It

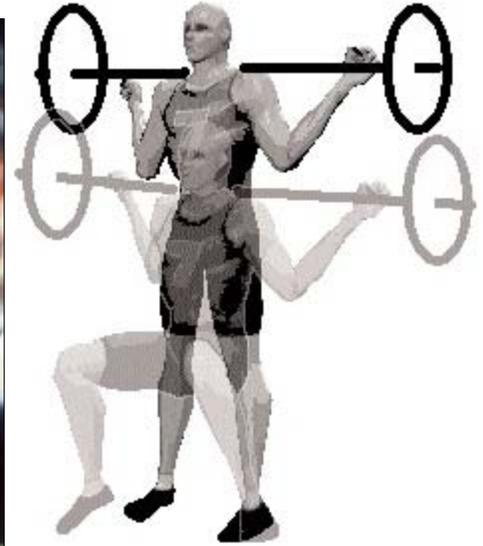
This exercise is specific to being a catcher, who is in a squat position many times in a game. This position requires coming out of that squat position and firing the ball down to second base. He does this exercise with 225 to 250 pounds, doing four to five repetitions. He first does traditional squats (no pause or acceleration as described below), for sets of ten, eight and then six repetitions. The final set is done using the pause squat with acceleration method.

## How They Do It

- Pause Squats with Acceleration

### The Start

- Use rack, with supports at midchest level.
- Be sure spotters are in position.
- Grasp the barbell palms down, slightly wider than shoulder width.
- Step under bar, feet parallel and shoulder width apart.
- Place the center of the bar on the upper back so it is balanced, resting securely across back of shoulders.
- Elbows pointed back, eyes straight ahead, buttock and abdominal muscles tight, squeeze shoulder blades together.
- Straighten legs to lift the barbell off rack and step backward, feet slightly wider than shoulder width and toes pointed out slightly with back flat and tight.



### Going Down

- Under control, bend hips backward, bend knees and ankles.
- Keep bar over middle of foot to heels, feet flat on the floor.
- Inhaling, descend slowly until tops of thighs are parallel to floor; pause for 2 seconds.
- Keep back straight, buttocks and abdominals tight.

### Coming Up

- Exhale as you straighten hips and knees to return upright accelerating under control.
- Keep hips under bar, eyes focused straight ahead.
- Back flat as possible.
- Knees over ankles.

### Tips

- Do not bounce at bottom position.
- Do not bring knees together coming up.
- Keep bar in control while accelerating. Heels may come off the floor but not the entire feet.
- Stay tight throughout movement.

## The Star: Trevor Hoffman, Pitcher, San Diego Padres The Exercise: Manual Resistance Rear Deltoid

*Sam Gannelli, Strength and Conditioning Coordinator, San Diego Padres*

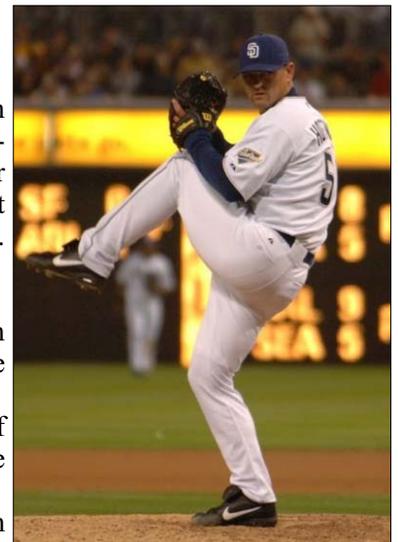
### Why Do It

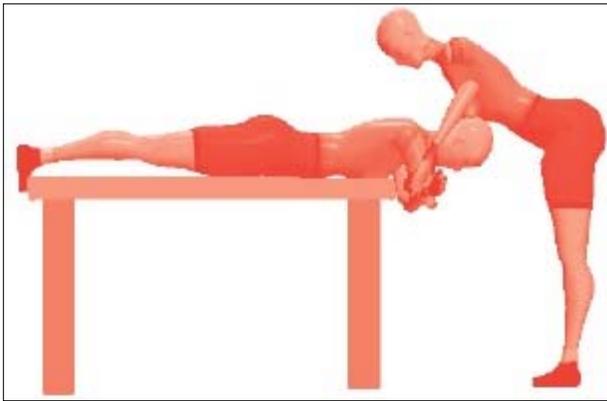
This is an injury-prevention exercise. This exercise strengthens the muscles in the back of the shoulders. The most important part of the pitching motion is the deceleration of the arm. This exercise strengthens the muscles that are, in part, responsible for this activity. This is part of a shoulder program. Trevor made over 70 appearances last year and we can't emphasize enough how important this exercise is in preventing injury.

### How to Do It

- The athlete, lying on his/her stomach, hangs his/her arms over a sturdy table such as a training table. The end of the table touches the athlete at approximately nipple height. The elbows are bent at 90°.
- A partner standing over the player and places his/her hands behind the elbows of the athlete. Resistance is placed on the elbows, bringing the arm to a position where the biceps almost touch. This is a good stretch.
- From this position the athlete drives the elbows up until the triceps are in line with or higher than the player's back. The arms are then returned to the starting position.

The player resists the partner on the way down and the partner resists the player on the way up. The exercise is performed slowly with a two-count going up and a fourcount going down. Do 12 repetitions every other or third day.





## The Star: Bill Wagner, Pitcher, Houston Astros

### The Exercise: Squat/Power Step-up Complex

*Gene Coleman, Conditioning Coach Houston Astros*

#### Why Do It

The purpose is to maintain the ability to throw the ball between 98 and 100 mph. He is 5'10" 210 pounds and is very compact. He generates most of his force with his lower body and trunk. This exercise assists in the generation of force from the ground through the trunk.

#### How to Do It

##### Squat

##### The Start

- Use rack, with supports at midchest level.
- Be sure spotters are in position.
- Grasp the barbell palms down slightly wider than shoulder width.
- Step under bar feet parallel and shoulder-width apart.
- Place the center of the bar on the upper back so it is balanced, resting secure across back of shoulders.
- Elbows pointed back, eyes straight ahead, chest up, tighten the stomach muscles.
- Straighten legs to lift the barbell off rack and step backward, feet slightly wider than shoulder width and toes pointed out slightly with back flat and tight.

##### Going Down

- Under control bend hips backward, bend knees and ankles.
- Keep bar over middle of foot to heels, feet flat on the floor.
- Inhaling, descend slowly until tops of thighs are parallel to floor; pause.
- Keep back straight and chest up.

##### Coming Up

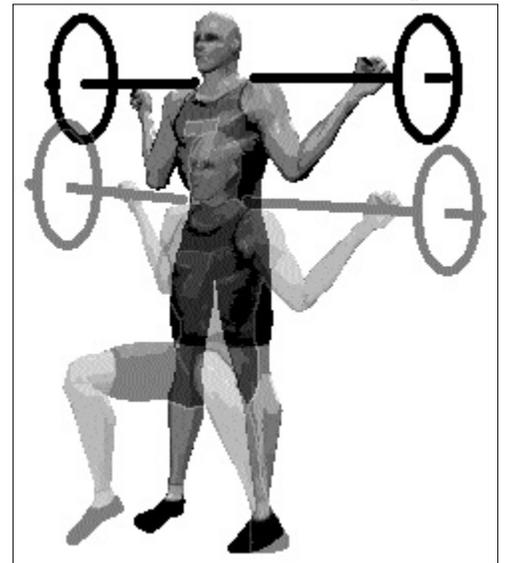
- Exhale as you straighten hips and knees to return upright under control.
- Keep hips under bar, eyes focused straight ahead.
- Back flat as possible.
- Knees over ankles.

#### Tips

- Do not bounce at bottom position.
- Do not bring knees together coming up.
- Do not speed bar up at the top.
- Stay tight throughout movement focusing on the abdominal area.

#### Power Step Up

##### The Start



Place one foot on a 14 to 16 inch box so that the heel is touching the near edge of the box.

### Coming Up

Push off with the foot placed on the box. The action is similar to running using the arms. The lead leg (leg on the ground) comes up high enough so that the support leg comes off the bench an inch or so. The emphasis is on full extension at the hip, knee and ankle.

### Going Down

- The feet are in the same position on landing.
- The support leg stays in contact with the box, the nonsupport leg returns to the ground. Do 10 reps and switch legs.
- Rest 1-2 minutes between each set of squats and then do 3-5 sets of power step-ups with 1 minute between sets. Start in the off-season with high volume and low intensity. As spring training approaches the intensity will increase and volume will decrease. At start of spring training he will be doing five sets of five repetitions with 300 to 330 pounds doing ten repetitions of the step-ups.



During the season, he will squat twice per week doing three to five sets of three to five reps with 85-90% of max. Billy trains after games, if he pitches 1 inning or less. If he goes two innings, he won't workout that night.

# Reading Research: Lower Extremity Strength and Recovery Time in Youth Baseball Pitchers: A Pilot Study

*Livingston, Jennifer L. PhD, ATC1; Tavoukjian, Nicholas M. MS, ATC, CSCS, TSAC-F2*

## Abstract

The purpose of this study was to investigate the Little League pitching regulations by measuring the change in lower extremity force production after a pitching performance and the subsequent days of rest required for youth baseball pitchers to recover. Bilateral manual muscle testing of the gluteus maximus, hamstrings, gluteus medius, triceps surae, and quadriceps was conducted using a handheld dynamometer. Fifteen healthy, youth baseball pitchers ( $9.80 \pm 1.08$  years) threw a submaximal number of pitches and were tested prior to, immediately after, and for the next four consecutive days. Time in days required per muscle group to return to baseline force production levels were compared to Little League rest guidelines for pitchers. Results indicated that Little League rest requirements did not allow for sufficient recovery of lower extremity strength ( $p = 0.017$ ). Results suggest that current Little League pitching guidelines provide an inadequate recovery period for youth pitchers, even when pitching a submaximal volume. Little League pitch count regulations and associated rest days may require revisions to avoid having youth athletes pitch while fatigued.

## PRACTICAL APPLICATIONS

The participants in this study threw fewer pitches than the Little League maximum daily limit for their age. Even so, lower extremity fatigue immediately post-pitching performance, especially in the stride leg, required more rest days for the muscles to return to baseline strength measurements than what is allotted by Little League guidelines. This discrepancy suggests the rest time between pitching appearances may need to be reconsidered, yet, as noted by other researchers (27,28), compliance with the required pitch counts does not fully protect youth pitchers from injury. Instead, coaches and parents should also consider the additional recommendations and risk associated with playing year-round, playing for multiple teams, early specialization, and playing 100 or more games in a year (7,18,27,28,33). The decreased rest time required by multisport athletes to return to lower extremity force production baseline scores supports adopting a second sport to improve lower extremity muscular endurance and conditioning. This could also be achieved by incorporating improved strength training and conditioning practices which target lower extremity strength, stability, and endurance. Finally, coaches and pitchers should extend monitoring for fatigue to include tracking changes in velocity, accuracy, and arm soreness (10). 

The Journal of Strength & Conditioning Research: [January 29, 2018](#)

# Reading Research: A New Method for the Evaluation and Prediction of Base Stealing Performance

*Bricker, Joshua C.; Bailey, Christopher A.; Driggers, Austin R.; McInnis, Timothy C.; Alami, Arya*

## Abstract

A new method for the evaluation and prediction of base stealing performance. *J Strength Cond Res* 30(11): 3044–3050, 2016—The purposes of this study were to evaluate a new method using electronic timing gates to monitor base stealing performance in terms of reliability, differences between it and traditional stopwatch-collected times, and its ability to predict base stealing performance. Twenty-five healthy collegiate baseball players performed maximal effort base stealing trials with a right and left-handed pitcher. An infrared electronic timing system was used to calculate the reaction time (RT) and total time (TT), whereas coaches' times (CT) were recorded with digital stopwatches. Reliability of the TGM was evaluated with intraclass correlation coefficients (ICCs) and coefficient of variation (CV). Differences between the TGM and traditional CT were calculated with paired samples t tests Cohen's d effect size estimates. Base stealing performance predictability of the TGM was evaluated with Pearson's bivariate correlations. Acceptable relative reliability was observed (ICCs 0.74–0.84). Absolute reliability measures were acceptable for TT (CVs = 4.4–4.8%), but measures were elevated for RT (CVs = 32.3–35.5%). Statistical and practical differences were found between TT and CT (right  $p = 0.00$ ,  $d = 1.28$  and left  $p = 0.00$ ,  $d = 1.49$ ). The TGM TT seems to be a decent predictor of base stealing performance ( $r = -0.49$  to  $-0.61$ ). The authors recommend using the TGM used in this investigation for athlete monitoring because it was found to be reliable, seems to be more precise than traditional CT measured with a stopwatch, provides an additional variable of value (RT), and may predict future performance.

## PRACTICAL APPLICATIONS

The results of this study seem to justify the usage of the TGM of base stealing evaluation as it gives a measure of RT along with the traditional TT variable. The TGM also seems to provide better prediction of base stealing success when compared with the traditional stopwatch method. Based on the results of the TGM, training programs can be designed specific to the needs of each athlete. Although improving strength/power may always be recommended, the method described in this analysis may also determine deficiencies in an athlete's ability to recognize and appropriately react to external stimuli. Scouts and coaches may also wish to use this method as it may differentiate between given athletes based on the running speed and an athlete's reactivity to a pitcher's stimuli. Further research on the TGM's predictability of base stealing success and the use of the TGM as a monitoring tool is also recommended. Throughout a lengthy baseball season, there may be changes in physical performance characteristics and an athlete's cognitive and/or reactive abilities. Future researchers should determine whether alterations in these abilities exist throughout a season. R

The Journal of Strength & Conditioning Research: [November 2016 - Volume 30 - Issue 11 - p 3044–3050](#)

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