Term-in-ation- Overcoming the Language Barrier

Coming to terms. Communication between the coach and the strength and conditioning coach is critical. The essential aspect of communication is talking the same language. The strength and conditioning profession lacks a common language and in order to be truly accepted as a profession, terms have to be recognized by the medical and the coaching communities. We have discussed this before. A common language is the only way to communicate with other professionals and within fellow strength and conditioning professionals. Acceptance starts within the strength and conditioning profession.

Where to start- Science offers a great opportunity to create a starting point. Some examples are:

Power equals force x time.
Force is mass x acceleration.
Work is force x distance.
Flexion: the decreasing of the angle between two segments of the body, as illustrated by bending the arm at the elbow.
Extension: the increasing of the angle between two segments of the body; for example, the arm, as it goes into extension, becomes straight.
Abduction: the movement of a part of the body away from the midline of the body. The arm, in abductions is raised away from the center of the body.
Adduction: the opposite of abduction. The raised arm is moved down toward the midline of the body.
Rotation: the movement of a part of the body turning on its longitudinal axis.
Prime mover: the muscle that bears the principle responsibility for a specific joint action.
Synergist: any muscle which contributes to a definite action, but cannot be classified as a prime mover.
Stabilizer: a muscle which anchors, steadies, or supports a bone or body part so that another active muscle may have a firm base upon which to contract.

Armed with a scientific base next step is to use science to form consensus definitions based on professional activity. These definitions must be peer reviewed to achieve consensus. Here are two example:

SAID Principle (Specific Adaptation to Imposed Demands): This principle states that the training demands must be specific in order to obtain the desired effects. This concept is referred to as "specificity of training". To increase strength, the athlete must train for strength. In order for one to realize maximum training effects, the imposed demands must be of a magnitude to force adaptation by the body. This is accomplished by increasing intensity gradually over an extended period of time. This is know as progressive overload.-Pat O'Shea

Training Age: represents a year is of continuous, year-round conditioning by the athlete beyond just playing a sport.
Beginning-level is defined as a training age of 0 to 2
Intermediate-level is defined as a training age of age of 2 to 4 years.
Advanced-level is defined as a training age of age of over 4 years.

The final step is to educate the professional communities (medical and coaching) by using the correct term in day to day conversation.

The task is monumental, but until it is implemented communicating the strength and conditioning process will remain a work in progress.

Something to Seriously Think About

Ken Kontor
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What is training for speed in the absence of speed? I see many coaches try to work with incoming athletes on speed, but it has not yet been developed and it creates a problem. All this starts with the work of Charlie Francis. We have a lot of high school kids come to us without any speed training, so they start it but do not progress. We have found that kids from high school programs have created...
so many problems that we must take a step back to fix it. I would rather have them not do things in the first place than have them do things incorrectly. I see a few high schools in Texas emphasize how fast a baseball or football athlete can run 60 yards because this is what scouts look for. As a result, they are not building up a player with proper technique. It is just running an athlete until they hopefully get faster.

**Speed Training Progression**

We have a four-block progression. The first progression is build-ups, the second is acceleration, the third is ins and outs or gears, and the fourth is flying sprints. Each block is about three to four weeks, depending on the athlete’s level—we have 18- to 24-year-olds in baseball who we separate into groups. The program takes about 20 minutes for an entire team. The big thing we want our athletes to do is relax while running to the point that their cheeks completely bounce.

**Progression Block One: Build Ups**

This is a zero- to 60-yard progression.

- **Week One**—30-yard build-ups x 8-10 repetitions
- **Week Two**—40-yard build-ups x 8-10 repetitions
- **Week Three**—50-yard build-ups x 8-10 repetitions
- **Week Four**—60-yard build-ups x 8-10 repetitions

One to three work-to-rest ratio with the 30-yard length progression to a walk back for the 60 yards.

**Progression Block Two: Accelerations**

10- to 40-yard positional starts

The first is a 10-yard sprint starting lying on the stomach, eyes closed, and head on the start line waiting on a stimulus such as a clap or whistle.

- Start at 10 yards the first week, and finish the last week at 40 yards.
- The first 10 yards, start on the stomach and then sprint. We vary the start specific to position. We may start the outfielder in a backward crouched position, turn, and run. The stomach start can be related to diving for a ball and getting up to chase the ball down.
- First two weeks, blind start on whistle on the stomach.
- Second two weeks, position-specific posture.

The first 10 yards, they are creating a build-up getting into as much acceleration as they can to 40 yards. They never hit max speed, so it is an acceleration drill.

**Progression Block Three: Ins and Outs or Gears**

- Divided into two two-week blocks

**First Block—Accelerated Block**

Set up: Four cones, 10 yards apart

- In an athletic stance at the first cone, they will accelerate at full speed to the second cone.
- At the second cone, they coast to the third cone.
- Back to full speed to the fourth cone.

**Second Block—Full Speed Block**

Set up: Five cones, 10 yards apart

- Athletic stance at the line, go 10 yards to build-up
- 10 yards, full speed
- 10 yards, coast
- 10 yards, full speed out
Progression Block Four: Flying Sprints

Set up: Two cones 60 yards apart, build up
- Place a third cone at starting at 50 yards from the starting cone.
- Run from the first cone to the second then sprint the final 10 yards.

Progression - This is done for four weeks, starting with the all-out sprint of 10 yards (two weeks), progressing to 20 yards (third week),

- finally 30 yards (fourth week).

Seasonal Considerations

Spring training is not the ideal time to implement this type of speed program. This program is specific to the in-season, which is around five to five and a half months. We back off the last month to send the players fresh into the post-season. We will also back off to what is done in the weight room. This ends up being a four-month training block.

High School Setting

This program can be plugged into the high school season. You could do a fall block of four months and a spring block for four months. The first block (fall), the coach has the opportunity to teach proper running techniques, and the second block would be devoted to speed development.

Fitting in Strength Training

Much of what we do is built on the Francis model of acceleration and shin angle. The emphasis is on hip extensors, even though speed is created from both hip flexion and extension. We spend a lot of time on hip force development. In pro baseball, Olympic lifts are not yet practiced to any great degree, so we do hang pulls and for more advanced athletes, pulls from the floor; which are variations of the Olympic lifts. We have players focus on hip extension and ground force development. This translates into speed. Speed training is done before strength training, and it should be done when the athlete is as fresh as possible.

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3 Ways to Reduce Stress for Your Players

Cory Ritter, MS, CSCS, Atlanta Braves Organization

In 2016 Cory will be entering his 4th year in professional baseball as a strength & conditioning coach. This will be his second season with the Atlanta Braves after his previous year in High A with the Carolina Mudcats and two years with the Seattle Mariners. His education includes a BS in Exercise Science received in 2011 and a Masters in Sports Science received in 2013, both while attending Florida State University. While at FSU, he worked with a wide range of sports including basketball, baseball and tennis working as an intern.

He was also a graduate assistant during that time in the Institute of Sports Medicine at FSU conducting sports testing. In his senior year of high school, he was given All-State honorable mention for baseball in the state of Florida as a pitcher and upon graduation pitched one year at South Florida Community College. Cory has been a Registered Strength and Conditioning Coach (RSCC) since September 2015.

Professional sports are a grind that can be hard to explain if you’ve never been on a bus or a plane midseason. If you have, then you can relate to having a lower body workout scheduled for your athletes only to sit through an extra inning game that crushes everyone’s energy level. You flip into your book at the end of the night and scratch out any type of plan you had for the next day and replace that with “sleep”. The life of a professional player is difficult, making the job of their strength and conditioning coach difficult as well. It’s a constant game of tug-of-war to get the most of your athlete that day, while trying to understand where they are physically and mentally. However, one unique benefit to being a pro level strength coach is the connection
and perspective we have with our athletes because we are on the same bus rides and flights, and getting into the hotel just as late. This allows us to be in tune with what our athlete might be feeling, which gives us a better opportunity to make adjustments.

When it comes to programming and creating workouts for athletes, private facilities have the luxury of planning out workouts and using periodization methods to reach a specific goal. Adjustments in that setting depend on how someone reacts to the previous day of training, what is going on in their life outside of training and how they are taking care of themselves (i.e. the food they eat or sleep they get). These factors still apply for an athlete in-season, but you also need to consider others. Travel, failure and distance from family and significant others can weigh on someone, causing secondary effects. All the things listed boil down to one thing the body feels: stress. A strength coach in pro sports typically is not able to push their athletes to the point that private facility strength coaches can. But what they can do is monitor and manage stress levels with a variety of methods to make sure that peak performance is possible on a day-to-day basis. In order to do this, we need to have a better understanding of how the body interprets and reacts to stressors.

A Quick Look at the Nervous System

Our nervous system, also known as the autonomic nervous system (ANS), can be useful in helping us get on the same page before we go further. Most, if not all, strength/performance coaches should be well-aware of the ANS and therefore this review will be very brief. The autonomic nervous system can be divided into 2 sections, the parasympathetic (PNS) and the sympathetic (SNS). The parasympathetic side deals with things like digestion and reducing your heart rate following activity, while the sympathetic will be responsible for activities that require athletic movements such as sprinting to first base or chasing a fly ball down in the gap. In other words, the parasympathetic is on full-blast when you plop down on the couch after a huge thanksgiving meal and the sympathetic side is on full-blast when someone is running away from a dangerous situation. But the interesting part to understand is the way the ANS switches between the two depending on the situation. For our purpose, we only need to highlight the way a professional athlete uses the nervous system to accomplish their goals.

We can assume that the high level athletes on our roster have learned to express the sympathetic side effectively due to the physical nature of sports. However, physical stressors are only a piece of the puzzle. Stress is stress and when a basketball player misses a free throw, a baseball players strikes out in a big situation or a football player fumbles in the red zone, the mental stress can be just as problematic. This highlights the importance for us, as a group, to pay attention and recognize the amount of mental stress our athletes are feeling just as much as physical.

Sleep quality is very bad in minor league baseball due to air mattresses and tight quarters. Sleeping in this environment can cause the sympathetic side to increase in a situation where it should be dominated by the parasympathetic, making important rest and recovery time turn into yet another stressor. A starting pitcher in minor league baseball should be recovering immediately after a start, but that is not always possible with a 5-9 hour road trip following the game. This can cause simple acute or short-term stressors to build up into chronic long-term stress in which stress response hormones continue to flood out resulting in adrenal fatigue. This “adrenal fatigue” is seen during the dog days when players all crack Red Bulls and Monster energy drinks before the game because they cannot manufacture anymore themselves. This, of course only makes the problem worse. Overall, a professional athlete’s day can be a roller coaster full of up’s and down’s. It is because of this that we need to be aware of the stress level of each individual athlete at all times.

Physical therapist and author of Supple Leopard, Kelly Starrett, has said in several interviews that a major issue among people is the ability to activate and “turn on” the sympathetic system in combination with an inability to turn it off and allow the parasympathetic system to take over. In the book, Why Zebra’s Don’t Get Ulcers, author Robert Spolasky mentions that a specific hormonal response, often referred to as the automatic stress response, can be activated even if the brain just thinks of something stressful. That means that the shift to sympathetic dominance can happen not only from physical activity on the field or in the weight room, but also from a player just thinking about striking out his next at bat in a close game.

Contracts, homesickness, injuries, bad performance, an argument with a teammate, or relationship problems can be stressful all on their own. Some of these players are dealing with more than one of those things at a time and still have months to go before they can go home. We can’t prevent an athlete from thinking a certain way and creating more stress. But, we can focus more attention and implement a few ways they can reduce stress during their daily schedule. There are so many stressors involved already that it becomes a fine line on where to implement add new things. It’s possible that by adding in things to help shift the athletes into a parasympathetic state during some parts of the day, we can reduce secondary effects of stress like lowered immunity and fatigue. I’ve found that many athletes, including myself, find it much harder to get into a relaxed state. I’ve also found that people in that category need to be taught how to relax rather than being told to simply relax. Teaching an athlete to relax quicker can help in times of competition where the athlete doesn’t need the...
3 WAYS TO REDUCE STRESS FOR YOUR PLAYERS

I believe that we can implement at least 3 simple things to reduce the amount of stress try to avoid a sympathetic shift during an unnecessary time. The sympathetic system is extremely useful for this sport. But it’s possible to teach the athletes how to achieve allostatic balance and when to use which. Here are the 3 possible ways to reduce stress in athletes:

1. SMF Release
2. Adjust the workload accordingly
3. Promote naps/Non-phone time during downtime

Self-Myofascial Release

This is an easy one that almost everyone does already. There has been debate whether using something like a foam roller is best to use pre-workout or post-workout. Personally, I think it should be used post-workout in order to take the athlete out of the sympathetic dominance into a more relaxed PNS state. Trying to use the foam roller is just an example, but there are other ways like using a lacrosse ball or getting deep tissue work done by the training staff. I’m not saying that it will heal all problems, but this is a quick and easy way to get into a good relaxed state and feel much better after only 5-10 minutes of work on a certain area. Knowing your athletes and their problematic areas will allow you to use this time efficiently. If one of your athletes has a tendency to tighten up in the quad/IT band area after a lower body workout, have them foam roll that specific area before and after the lift rather than spending time on the thoracic spine. Using self-myofascial release can be a very effective tool when specific individual approach is used. Diamond Link: Learn more on foam roller as part of massage.

Adjusting the Workload

The term “auto-regulation” is a perfect way to describe how we can monitor workloads. Strength and conditioning professionals use this method because of the ability to match a workload to what an athlete has that day. Auto-regulation helps to create a unique environment between strength coach and athlete that would not be possible in-season. Communication is mandatory with this method, allowing a strength coach in baseball to have much more dialogue with players than a sheet of paper would provide. Consequently, it can be difficult to use if you do not have a great working relationship with your athletes.

In order to use this method, you aren’t prescribing volume to do, but rather trying to find out what effect certain volumes will have. An example of this would be one of your star players that never misses more than 1 or 2 games per month might need less volume to have the same stimulus and effect as the bench player who has been able to train 4 times per week. That star player’s minimal effective dose of training is much lower than someone who is not nearly as fatigued from factors outside of the weight room. So when this player comes in and seems drained and barely getting through his warm-up, you program that had back squats 3 sets of 5 working up to roughly 83% of a 1RM might need to be adjusted during the workout once you judge how the athlete looks. If you see that he or she is grinding through the workout already before the working sets have started, then a quick adjustment to intensity or volume is probably in order. That doesn’t mean that the workload will be any less effective, it just means that today the athlete’s 80% is lower than a day where they come in fresh and ready to lift. Using auto-regulation can work for conditioning as well, as it only requires your eyeballs and dialogue with the athletes in order to gather enough information to adjust the workload accordingly. For example, if one of your players has a very high on-base percentage, you can lower the amount of reps prescribed for his or her conditioning program. Auto-regulation can be an effective tool in-season if used correctly and used with a purpose in mind.

Promote More Naps, Less Digital Time

Taking a quick nap in the middle of the day can be a very good way to spend downtime. In baseball, a great time for this would be right after batting practice on the field when the home team comes in for the pre-game meal. A little post-BP food and a 15-minute nap would do the body very good in most cases. Players often use this time like play cards or video games instead. None of those options can help like refueling the body and allowing 15-30 minutes to relax and recharge. Urban Meyer, the head coach for the Ohio State football team, has gone as far as buying his entire team blowup mattresses during two-a-day practices, allowing the team to sleep in the locker room between practices. Meyer is typically on the ball with implementing cutting edge ideas into his program and staying current with out-of-the-box ideas to help his team. I don’t suggest requiring your team to take a nap or even buying the whole team blowup mattresses. But I see a window of time that can help an athlete shift into a more parasympathetic state at that time, which would allow the sympathetic side to recharge and be ready for game time.

The other part of this section may seem unrealistic, but can be quite important. The idea of getting players to put down their phones and tablets will be a battle between strength coach and athlete forever. Kelly Starrett, author of Supple Leopard, has been a proponent of getting people to put their phones down at least 30 minutes before bed due to the amount of light the brain is subjected to from these devices. A letter from Harvard Health specifically states that not only is light before bed detrimental, but the blue light emitted by your electronics is especially problematic. This is due to a few factors that tie into your sleep cycle and also a possible link to issues like heart disease.

For our purpose, we can stick to issues with the sleep cycle. Blue light emission suppresses melatonin secretion
more powerfully than regular light and melatonin plays a big role in your sleep. So not only is light before bed not recommended, but choosing blue light is only going to cause you more issues with your sleep rhythm. This topic is becoming more and more popular as the world of technology continues to integrate our lives. If we can encourage our athletes to reduce the amount of blue light emissions before bed their energy levels could improve. It’s a stretch, but explaining to your athletes that they need to put the smartphone down at least an hour before bed can help you avoid the cranky effect that a lack of sleep can cause. This is especially important if you plan on having your athletes lift before 10am.

Things to Remember

Using these three ideas, we can reduce the chance of groggy, cranky athletes during the dog days of the season. By simply making adjustments and recommending more productive ways to spend free time, we can improve energy levels during game time. Having foam rollers and lacrosse balls readily available will allow SMF to be more convenient for the athlete. If unsure, strength and conditioning professionals can research more on auto-regulation and session RPE’s to become more educated on adjustments. Although these topics have been around for some time, there is always more to learn. Finally, informing your athletes on the dangers of blue light emissions before bed can help the effort level you receive in the gym. That will, in turn, improve the effectiveness of your workouts. If you notice players constantly reaching for an energy drink or a coffee before activity is required, it’s a good bet that their sleep quality or sleep duration is a problem. Anything that helps improve performance in the weight room is worth implementing.

Contact Cory at: coryritter_pt@yahoo.com

Two Foam Roller Exercises from Damon Roberson

**Middle Quad/Hip Flexors**

Begin by placing roller just above the knee and on the quad not the knee cap. Bend your leg so the thigh and lower leg are at 90 degrees. Begin the manipulation by inhaling and rolling 1” up the quad, then exhaling and rolling 1/2” back down in a slow and controlled fashion. In these small increments, work up the quadriceps muscles and into the hip flexors. This can be immediately followed by working back down the muscle in a similar fashion of 1” down and 1/2” up. Apply pressure, as tolerated, to the leg that is being worked. The lower the hips are to the ground, the more intense the massage will be. Take several deep nasal breaths and allow the muscles to relax. To add to the manipulation shift the leg side to side over the roller for cross-friction. Next internally and externally rotate the foot to address the lateral portion of the upper leg on your way back down toward the knee.

• Repeat this process with the leg resting in three different positions.
  1) Neutral center position
  2) 45 degree rotation to the inside
  3) 45 degree rotation (working the seams of the IT Band)

**Benefits:** Release in the middle quad helps with back and hip pain, dysfunctions of the knee.

**Muscles Worked:** rectus femoris, psoas vastus medialis, vastus lateralis, vastus intermedius!

*See Figure 1*

**Soleus**

By working the soleus, you can free restrictions in the way the foot functions, how the calves behave and proper flexion and extension of the knee. This can have a dramatic effect on how we may perceive how “tight” we think our hamstrings actually are. Working the soleus on a weekly basis will help you recover faster and allow other muscles to not have to work so hard.

Begin by placing the roller approximately 2” above the ankle joint and 2” below the meaty part of the calf where the gastroc and soleus meet. Apply pressure as tolerated to the top of the leg, that is being worked. This can be accomplished either through lifting the hips off the ground by placing the opposing leg on top of the leg that is being worked or...
using the hands on the shin. Take several deep 
breaths and allow the muscles to relax. Roll back 
and forth only 1-2 inches per second. Feel for a 
tight spot/trigger and stop there applying compres­
sion for 10-20 seconds. Take in deep nasal breaths.
Roll the same spot again for 20-30 seconds and go 
back to that same area where the hot spot was. 
Again apply compression after rolling 10-20 sec­
onds. Now take a break, by lowering hips to the 
floor and take a few belly breaths. Lastly, you can 
shift the leg from side to side while maintaining 
pressure on the roller to allow for some cross-fric­
tion to occur. Move your foot in circles to restore 
range of motion. Repeat the process 2-3 times as 
you work your way up to the calves.

**Benefits:** Improved stability, functional strength, muscle tissue pliability, and injury prevention for the entire leg, hips 
and foot.

**Muscles Worked:** soleus, achilles, gastrocs/calves, Posterior tibialis

*See Figure 2*

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### The Dynamics of a Philosophy Change in Professional Baseball Strength and Conditioning

*Dwayne Peterson, Strength and Conditioning Coach Lancaster JetHawks, Houston Astros*

**PC:** I would like to focus on your philosophy transition. What prompted you to make these changes from the phi­
losophy you already had?

**DP:** My philosophy has always been to train hard. We would lift heavy with compound 
movements. I wanted the legs, back, and core strong with rotational strength. We did not 
do a lot of high-rep volume based on how the players felt. We trained in three-week 
blocks, and the first was a recovery week and two weeks dictated how the players felt 
and what their schedule was. My planning follows the general parameters of the Astros 
oraganization under the direction of Jake Beiting (our major league strength and condi­
tioning coach) and Brendan Verner (minor league coordinator).

I don’t believe in high rep volumes in-season—creates too much muscle soreness 
and cuts into recovery times for our athletes.

Recovery weeks are based on how players feel, schedule etc. So if we just came 
home from a 7 day road trip and played 1-2 extra innings games in that span I would 
schedule a recovery week. Or if I know we are having rovers in town I will schedule a 
recovery week for the guys as they will be getting A LOT of extra work from their 
coaches/manager.

And yes everything I do must fall under the planning and program of Jake and 
Vern.

**PC:** Where does this fit in the seasonal model of off-, pre-, and in-seasons?

**DP:** This philosophy I just described is my in-season philosophy. In the off-season, I work with my collegiate players 
back home at the Division III level. My off-season philosophy is similar. But we go a little heavier with heavy double and 
single reps.

We work in some isometrics, plyometrics, and dynamic work, emphasizing speed. We are a limited on equipment; I don't have the bungees to do more accommodative resistance.

Typically we will train 3 days/wk with two of those being lower body days. First is a max effort type day where 
we will back squat working up to heavy doubles or singles. The second day is an upper body day mainly focusing on 
flexibility and upper back/shoulder integrity.

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*Performance Conditioning Baseball/Softball Volume 15, Number 3  Page 8*
DYNAMICS OF A PHILOSOPHY CHANGE IN PROFESSIONAL BASEBALL STRENGTH AND CONDITIONING

Third day is where we will do our front squats/split squats/plyometric work at around 80% of our max. Every 3-4 wk is a recovery week where I take training percentages down to 55-60% and focus on moving the bar as quickly as possible.

Use bands instead of bungees...just sounds more pro haha.

**PC: Where are you headed with your shift in philosophy?**

**DP:** I evaluated how I have trained guys with the Astros and the results that I have had. I felt that last season was the best season I have had as a strength coach. I had several guys say they felt stronger and better in August than in April. Pitchers felt they were getting more drive out of their hips with healthier shoulders. But I still looked at what we were doing in professional baseball.

I also considered collegiate baseball. I have been talking with the strength and conditioning coaches for baseball at the University of Kentucky and Louisville. There I learned of Cal Dietz’s book on the Triphasic system where concentric, eccentric, and isometrics are combined in two-week blocks. Each phase is movement training heavy. I am looking on how to incorporate that.

Each block is trained generally at 80-85% of the athlete’s max (1RM), especially the eccentric training block. Isometric and Concentric blocks will occasionally work up to 90% but that’s about it.

Triphasic trainings philosophy believes that your strongest athletes are those that can decelerate a load, bring that load to a complete stop and concentrically apply the most force in the quickest amount of time possible. Thus why each phase of the contraction is trained.

Think of it like a V curve where the left side or downward portion of the V is the eccentric, the point on bottom is isometric and upward slope is concentric.

The better athletes have a V that more closely resembles the V that you see on your computer when typed (this is with regards to time and force applied...X axis would be time and Y axis would be force). That is Triphasic training in a nutshell.

The next thing I am looking at is the Postural Restoration Institute (PRI). I took a course from them and I feel this is important information to prevent injury and make players feel better. This is a vital part of training heavy and hard. For this I’m looking at what Westside Barbell does. I am interested in their speed and dynamic work and if they have a place in what we do.

I think there is an important message that we can learn in professional baseball from college programs—do not to take the cookie cutter approach with our athletes. We must expand our knowledge base to ensure that programs are individualized based on our unique circumstances. I do not think this is the norm right now in many aspects of our profession. We are moving towards it with the Astros, though. This is why my program is constantly being self-evaluated. When I make it to the next level from high A ball, I want to have an impact!

**PC: There is a tendency in strength and conditioning to continually add to a program. But the reality is that if you add, you must subtract something because you only have so much time. How do you approach this?**

**DP:** That is a difficult question. When you are a coordinator or at the major league level, you must consider how you can implement everything in a way that works. You do not want to injure guys by going too heavy in-season. From a PRI perspective, we approach it as pre-prep work with a series of exercises for guys before batting practice or even before games. It replaces the warm-up. We can also take some of these PRI principles and apply them to our strength program, but you should be selective so that they do not compromise the program. The custom testing that PRI offers is a good way to individually screen players. We can prescribe exercises and move them up the PRI scale from 2 to 4, which is a big improvement.

I just wrote an article for the PBSCCS website on tempo training for baseball. There is a place for isometric work for players, especially young ones, to allow them to learn to engage specific muscles such as the inner glutes. Triphasic training helps, too. I then integrate some of the speed work advocated by Westside Barbell to create a blend. My goal is to get guys better in-season than they were pre-season. Is this achievable with everybody? No. It takes a toll on some guys. This is where you must be strength coach, talk with guys every day, and gain personal relationships. It is a constant evolution.

PRI is a VERY new concept to our organization as in we haven’t applied it yet. I am giving a presentation on it this spring sometime and then we will look to add it to our program.
Our prep routines currently do not have any PRI exercises in them; our prep routines have a series of exercises designed to just warm up the essential muscles that are required for performance.

The test that I believe apply to baseball the best is called the Hruska Adduction lift test (see side bar). This essentially tests the athlete’s ability to get into a biomechanically proper “stance” phase in walking/running gate. A score of 1-2 is typical of athletes with a left AIC pattern deficiency and a score of 3-4 is optimal for proper gate/performance.

I believe this should be something we test in spring training, however we have not implemented this yet.

PC: Can you tell us a little more about the Westside Barbell speed program?

**DP:** This is done with the major lifts. The traditional way is that you max squat, bench, and deadlift twice a week and vary the lifts. On squat day, you substitute front squats and work up to a one-rep max. The other two days are speed days when you do the traditional three lifts, but you also do some accommodating resistance with bands, trying to move the bar as quickly as possible, doing 55-60% on a one-rep max. This is all done with low reps of eight sets, for two or three reps. Rest is only 30 seconds, so it is also a conditioner. The program takes eight to ten minutes.

WBB has two main days for the main lifts; Max effort day and Dynamic effort day.

Max effort day consists of trying to hit a new PR on an exercise SIMILAR to the bench/squat/deadlift BUT not actually benching, squatting, or dead-lifting. You change the max effort exercise each week to ensure your CNS is not fried by week 3. Your essentially maxing out every single week. For example: max effort day for bench press may consist of you working up to a 1RM on the floor press or the incline bench or board press etc. Squat day would be front squats, box squats, safety bar squats, good mornings etc. Following the max effort exercise would be your assistance work so for bench: triceps/delts/lats….for squat: glutes/hams/lower and upper back.

Dynamic day you perform one of the three major lifts at 55-60% of your max and focus on bar speed. Typical prescription is 8 sets of 2-3 reps without accommodating resistance or 6 sets of 2-3 with accommodating resistance. The key there is BAR SPEED, great day to work technique and your overall groove with the lifts.

The workouts themselves shouldn’t last no longer than 60 minutes. Dynamic day, you can work cardiovascular conditioning as well by cutting rest times on the major exercise (banded squats/deads/bench etc) and get 6-8 sets completed in 8-10 minutes.

PC: Dwayne that is an excellent summary of these training systems. Any final comments?

**DP:** I believe I outlined the basics of Tri-Phasic above in my comments; one other thing Tri-Phasic believes is that you need to find the proper depth of the squat for each sport…as it differs in each sport. For example if your training baseball...
DYNAMICS OF A PHILOSOPHY CHANGE IN PROFESSIONAL BASEBALL STRENGTH AND CONDITIONING

players…when stealing a base they are required to start from about 90 degrees of hip/knee flexion (isometric to concentric) this requires them to be able to apply force concentrically from an isometric contraction very quickly at 90 degrees of hip flexion. Some athletes however that position may not benefit them, if your training your athlete to be able to apply force quickly from an isometric hip position of 90 degrees when their sport requires them to apply it a little higher…then you’re not making them better at their sport. If you need more please let me know.

WBB Dynamic day I outlined above as well….only thing to add is that Westside believes the Dynamic Squats (speed squats) should be done on a box. Westside RARELY believes in just squatting, 95% of their squatting is box squats. Obviously this does not translate well to baseball as athletes are rarely going to be in that position on the field, which is why I don’t use them. Finally I've included a sample collegiate program that I use.

More information Please! Contact Dwayne at Dpeterson@astros.com.

Hruska Adduction Lift Test

This test is used as a Myokinematic measurement with each grade reflecting muscle position, strength, and neuromuscular ability. The test is named for the leg, which is placed on the examiner’s shoulder. (Patient is lying on their left side with right ankle placed on examiner’s shoulder → “Right” Hruska Adduction Lift Test.)

Position
1) Patient sidelying – back rounded
2) Uppermost lower extremity resting on therapists shoulder (neutral hip, extended knee)
3) Lower leg in flexed position
4) Maintain pelvis in a neutral position (do not allow upper pelvis to rotate forward or backward)

Mechanics
1) Step 1: ask patient to raise ankle of flexed lower leg to upper knee
2) Step 2: have patient raise flexed lower knee while keeping ankle to the knee
3) Step 3: patient will then raise lower hip while maintaining the above positions
4) Discontinue test at the step patient is unable to perform

LEVEL → 0
- Inability to raise lower ankle off mat or table
- Obturator weakness of flexed extremity

LEVEL → 1
- Ability to raise lower ankle to upper knee
- Inability reflects either weakness of FA external rotators or AF stability of active extremity

LEVEL → 2
- Ability to raise lower knee and ankle
- Inability reflects instability of AF and weakness of adductor magnus and obturators or an anterior tilted and forwardly rotated pelvis with accompanying FA IR weakness secondary to long position of ischiochondylar adductor and short position of gluteus minimus, medius and TFL

LEVEL → 3
- Ability to maintain above position while lifting lower hip off table slightly
- Inability reflects weakness of FA stabilizers on extended extremity including the short head of the biceps femoris and adductor magnus and possibly bilateral AF stabilizers including muscles of the pelvic diaphragm and lower gluteus maximus
LEVE} 4

- Ability to raise hip completely off mat or table to level of patients shoulder and exami-
iner’s shoulder
- Inability reflects lack of core lumbopelvic femoral strength and more than likely the in-
ternal obliques on side of the flexed leg and external obliques on side of the extended

LEVE} 5

- Ability to raise hip above level of the patients shoulder and equal to examiner’s shoulder
- Inability reflects patient’s strength and neuromotor proprioceptive skills to shift hips

Menu of Exercises with YouTube

Medicine Ball Leg Strength Development

Baseball/softball are power sports. Power equals force x time. Force is mass x acceleration. Work is force x distance. Bottom line it’s all about force. Here are some simple exercises to develop force (strength) to increase power.

Here is a few exercises that can be done with a simple medicine ball right on the diamond.

What Medicine Balls Develops

1. Joint integrity or stability.
2. Proprioceptor awareness (awareness of body part segment position in space during movement).
3. Coordination of movement (when body parts work together in harmony).
4. Functional flexibility (when the body can move, sport specifically, through a range of motion).
5. Core (muscles of the abdomen, obliques, hips, low back and spine).
6. Strength (for both movement and support).
7. Static and dynamic balance (body control).
8. Ability to generate power.
9. Ability to convert strength gained to acceleration of the legs.

Progressions

Medicine ball training can be used to develop beginning levels of strength. Medicine ball training programs should begin using light balls. This will help develop basic strength, joint integrity, proprioceptor and balance and will involve most of the body. The athlete will have to stabilize his or her core to perform many of these exercises.

The next progression is to move from strength to power development. The speed of movement gradually goes from slow to fast. As the core area becomes stronger, the player will be able to functionally transfer power more effectively from the ground up.

Add these to your Menu of Exercises

Squats — Shoulder-width Stance

a. Grasp med ball with both hands and place on the neck, feet shoulder-width apart, toes pointing out slightly.
b. Lower the body under control until top of thighs are parallel with floor, keep back in a neutral posiition.
c. Make sure feet stay flat on the floor and knees stay over toes throughout lift.
d. Maintain a tight abdomen and flat back throughout the lift.
e. Return to upright position. Do not let knees come together.

Click HERE to Watch
Overhead Squats
Same as squats, only place the med ball overhead with arms locked.
Click HERE to Watch

Speed Squats
Same as squats, only lower the body until tops of thighs are just above parallel to floor and quickly return to a position where the knees are slightly bent at the finish. Movement should be quick but controlled, avoiding full extension of knees at the end.
Click HERE to Watch

Squat Push
Start with the ball at the chest, elbows out and slight downward, feet positioned approximately shoulder width apart, and toes angled slightly outward. Follow the same progression as stated above while pushing the ball away from the body and below shoulder height during the decent phase of the squat. Return the ball to the chest during the accent phase of the squat - decelerating as the knees and hips reach full extension. Maintain a tight core throughout the movement especially when the arms are maximally extended. Repeat for six repetitions at a rate of one squat per second or as needed for successful movement.
Click HERE to Watch

Overhead Squat Press
Start with the ball at the chest, elbows slightly out and downward, feet positioned approximately shoulder width apart, and toes angled slightly outward. Follow the same progression as stated above while pushing the ball directly overhead during the decent phase of the squat. Return the ball to the chest during the accent phase of the squat - decelerating as the knees and hips reach full extension. Maintain a tight core throughout the movement especially when the arms are maximally extended. Repeat for six repetitions at a rate of one squat per second or as needed for successful movement.
Click HERE to Watch
Abstract

Abstract: Oliver, GD, Weimar, WH, and Henning, LE. Effects of a simulated game on muscle activation in youth baseball pitchers. J Strength Cond Res 30(2): 415–420, 2016—It is generally accepted that playing with fatigue is a primary predictor of injury in youth baseball because muscular fatigue is believed to alter mechanics during the arm cocking and acceleration phases. Therefore, the purpose of this study was to quantitatively describe gluteal and upper extremity muscle activations in youth baseball pitchers during a simulated game. Twenty-three youth baseball players (11.2 ± 0.8 years; 151.4 ± 8.7 cm; 47.5 ± 10.8 kg) participated. Data were collected through a Delsys Bagnoli–8-channel electromyography system. Single differential electrodes (interelectrode distance: 10 mm) were attached to the bilateral gluteus maximus and medius and throwing side latissimus dorsi, lower trapezius, and serratus anterior and upper trapezius. After warm-up, participants were instructed to throw randomly provided game situations over a regulation distance (46 feet; 14.02 meters) to a catcher. Three, 4-seam fastballs for strikes, thrown in the first and last innings of the simulated game were selected for analysis. A multivariate analysis of variance revealed no statistically significant differences in muscle activity at the 3 phases of the throw, between first and last innings of the simulated game with an observed power of 0.274 (phase 1: foot contact to maximum shoulder external rotation), 0.297 (phase 2: maximum shoulder external rotation to ball release), and 0.226 (phase 3: ball release to maximum shoulder internal rotation). Examining muscle activations as a pitcher approaches fatigue provides information on how long a pitcher can perform before mechanical alterations occur. Although this study did not reveal significant changes, it did reiterate the fact that pitch counts may be working in possibly preventing a youth pitcher throwing to fatigue.

Practical Applications

The results of this study have implications for the coach, sports medicine specialist, strength and conditioning professional, and biomechanist. Examining muscle activations as a pitcher nears their age restricted pitch count limit provides information as to how long a pitcher can perform before mechanical alterations occur. As pitch counts are enforced to prevent youth from throwing with fatigue, this study provides evidence that the restrictions in place currently do not allow statistically significant changes in muscle activation. In fact, diminished activations were noted. Furthermore, the muscles in which these decreases occurred have direct implications for speed, accuracy, and also for altered mechanics. Specifically, degradations in the contribution of these muscles put the thrower at risk of poor performance and injury. Therefore, care should be taken to increase the endurance of these muscles with exercises that work these muscles in the primary directions of the throwing motion. Seventy-five pitches is the age restricted limit for the participants in this project; however, a pitcher needs to be able to reach this number without fatiguing, and there is a possibility that not every 10 to 12 year olds should throw up to the limit of 75 pitches. Furthermore, fatigue is an individualized variable, and those pitchers with “better” mechanics may not encounter fatigue as early as a pitcher with a less efficient pattern. Finally, more research is needed to identify the causes of fatigue, conditioning to prolong the development of fatigue, and also efficient and effective throwing patterns to avoid the cascade effect of compensatory injuries as throwing athletes age.
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