

General and Specific Exercises in Sport: Part II
An Interview with Michael Yessis, PhD.
By Tony Schwartz

It has come to our attention that a large amount of misinformation about specific exercises has been circulating throughout the strength and conditioning community in the West. The first article in this series covered the basics of specific and general exercises. In this installment we dispel many of the myths surrounding specific training while building upon the basics presented in Part I.

Tony Schwartz: Let's begin with a little background information about you. Tell the readers why you are qualified to speak on the topic of specific exercises and training in general.

Dr. Yessis: Well, my first exposure to specialized exercises came about 30 years ago when I was publishing the Soviet Sports Review. I was in contact with several Russian coaches who gave me books on specialized exercises that they were using for track and field. These coaches raved about the effectiveness of these exercises. At the time, I was a professor of biomechanics and kinesiology. In the classes I taught, my students and I analyzed the technique of many athletes. We began to use specialized exercises with these athletes and we were simply amazed at the results these exercises provided. The results were nothing short of phenomenal.

Since that time, I have continued to experiment with specialized exercises. I have used my background in biomechanics and kinesiology to perfect these exercises, as well as developing many more to suit the needs of the athletes with whom I work. When I began working with specialized exercises, I soon learned how far behind the U.S. was in terms of scientific training knowledge. To this day, I continue to be amazed at how far behind most U.S. coaches are.

TS: The Soviet Union collapsed several years ago. Why do you think the U.S. is still so far behind in terms of training knowledge?

MY: It all starts with the background of the coaches. Most coaches in the U.S. simply don't have the background to understand the need for specialized exercises. To truly understand specialized exercises coaches need a background in biomechanics and kinesiology.

Coaches also need to realize that all training should be related to improving athletic performance. Improving performance means that the athlete plays the sport better. This all comes down to improving the technique, whether by correcting errors in the technique or by improving the speed of the action. The coaches here have become too focused on strength training, but if increased strength isn't going to improve the athlete's performance, then why do it? Everyone reads about guys like Ben Johnson benching 400 and think that this is why he was fast. Using this logic, he would have been even faster if he benched 500 or 600.

In addition to strength training, coaches also include things like running and stretching. But the concept of specialized exercises and technique improvement is completely foreign to most coaches. Just as an example, I recently read about a major league pitcher who came to spring training with messed-up technique. The coach's solution for this was yoga and Pilates. How much sense does this make? Professional athletes using yoga and Pilates to correct their technique...it's simply appalling. This is why I say that we have million dollar athletes with five-and-dime coaches.

TS: How do the various views on periodization affect all of this?

MY: The concept of periodization is completely different in the U.S. than it was in Russia. The focus in the U.S. has been on the periodization of strength. But the whole idea of periodizing strength is ludicrous. We don't simply want to develop strength as an individual entity. This is not the end goal for most athletes. There needs to be a reason to gain strength. If you need more strength to increase performance then that is fine, but there is no need to increase strength just because you can.

The traditional Matveyev periodization model utilizes four phases: GPP, SPP, competition, and transitional. The purpose is to get the athlete to perform better in competitions, not to increase strength. General strength training plays an important role in the GPP phase. This gets the athlete ready to perform, but for a high level athlete does not improve technique or other abilities to a level that will enable him to perform at a higher level. The SPP phase is where the specific work is concentrated. However, the SPP phase means more than simply training the specific energy system and strength quality (e.g. speed-strength). The exercises in this phase must also be specific to the biomechanics of the sport.

TS: Considering that much of the Russian literature has been a big influence on many coaches in the West, why do you believe the concept of specificity has never taken hold?

MY: It goes back to what I was just saying. Coaches simply don't have the background. They don't understand periodization and they don't understand technique. Many coaches think they know technique, but it is obvious they don't by the things they say. As an example, pitching coaches often say things like, "we have to tighten his curveball; it's too loopy," or, "we've got to get him throwing more towards the plate." But this doesn't really tell you what the problem is. If a coach truly understands the biomechanics of the sport then they can create exercises that are specific to their sport. Unfortunately, many coaches think that simply having experience in the sport is qualification enough to be a coach. In addition, university programs in exercise science offer nearly nothing of value to the aspiring coach.

This overall lack of knowledge in biomechanics and kinesiology is the reason that coaches typically stick to exercises that they think will take care of everything their athletes need. Exercises like the squat, bench, and deadlift are used heavily in many programs. But these exercises don't cover everything the athlete needs.

In addition, there are no books in the U.S. - except for mine and a few gymnastics books- that deal with technique and show the sequence of all the actions that occur in a particular skill. U.S. books on technique typically cover an entire sport skill in 1-2 paragraphs without the use of sequenced pictures. The pictures they do use are posed. But how can you pose an action that occurs at high-speed like a baseball swing?

As an example, Tony Gwynn has a book on hitting. Now I'm not trying to take anything away from Tony Gwynn as a player; he was an excellent hitter. If you look through his book, though, you will see that he does not include a full description of the swing. Someone looking through this book might think that the incomplete description he gives is fine, but when you compare it to what I have in my books you will quickly see that he has left many things out.

TS: It seems that this lack of information on technique has led to the very pervasive view among coaches that the only two components of a successful program are general strength training and practice of the sport itself. Why do you believe this to be a less than optimal way of training?

MY: First, let's get something straight. As I said before, general training is the base for all training. The athlete needs to get in shape and get strong. But this will only take you so far. I can be in the best shape and be the strongest guy in the world, but it won't make me Michael Jordan.

The problem is that, particularly with professional athletes, they show up for training camp after lounging around for the entire off-season. If a professional pitcher is showing up to camp not being able to throw 100%, then something is wrong. For these guys, general training will be a big help because they simply need to get in shape. With that said, the real problem is that a professional athlete should already be in shape. We should not have to worry about getting these guys in shape. Once an athlete is in shape, the benefits of general training diminish.

The real questions are, "Are the guys who just train in a general way able to play better than the previous year?" "Do they run faster or cut quicker?" No. General training will improve the athlete's stamina, which is good. For example, it will allow a basketball player to run up and down the court all day, but it will not make the athlete shoot or cut better from year-to-year. This is why general training alone is insufficient. The point of training is to make the athlete a better player; not just stronger or more fit.

I often hear from strength and conditioning coaches that this isn't their job. What, then, makes these coaches different from a personal trainer in a typical health club who simply took a weekend certification class? They both know how to increase strength and general fitness levels. The job of the S&C coach is not just to improve strength and fitness. The job of the S&C coach is to improve the performance of the athlete. Unfortunately this point has gotten lost somehow. This is why we see so many personal trainers working with professional athletes.

Tony Schwartz: A critique of specificity is that the speed of many sports skills cannot be replicated off the field of play. Therefore, we should not try to replicate these skills at all. What are your thoughts on this argument?

Dr. Yessis: The idea that the speed of an on-field sport action cannot be duplicated is based on false information. If this was true, then no high-level athlete would be able to improve their playing skills. For a high-level athlete, just playing the game improves strategy and tactics more than physical abilities. This is why you typically don't see professional athletes getting better from year to year. Playing the game does not improve strength or quickness. This only applies to the high-level athlete, though. For the athlete who is still maturing, strength and speed will increase as part of the maturational process. This allows the younger athlete to improve from year to year by just playing the game.

Also, even if you can't duplicate the speed, then you can still develop more strength in the correct range of motion. Using the squat to improve the Olympic lifts is a good example of this. The squat does not replicate the whole skill of a clean or snatch, but it does replicate a part of it. This is why the squat is a staple in most Olympic lifting programs. However, the squat will not improve top-speed in sprinting (except in the case of a novice athlete) because it does not replicate the range of motion that occurs there.

Going back to Olympic lifting, the Russians looked at the effects of different specialized exercises on the speed of the Olympic lifts. What they found is that a particular specialized exercise would improve a particular segment of the Olympic lifts. This shows that specialized exercises have very specific effects. As such, the coach must be able to determine the weaknesses of an athlete and be able to prescribe the exact exercises that will correct these weaknesses. High-level Olympic lifters don't just do full snatches and clean and jerks. Specialized exercises are critical to improving their performance. It's up to the coach to recognize how powerful the effects of specialized exercises can be. Prescribing the wrong exercises will not just make the athlete stagnate, but may also severely hinder his performance.

For example, baseball pitching coaches say things like "we've got to get him throwing more towards the plate." Well where is he throwing? First base? This type of talk doesn't tell you what the athlete's weakness is, much less how to correct it. These coaches simply create terminology to cover up their lack of understanding. Furthermore, the players realize these coaches aren't making them any better, but they can't question the coach or they jeopardize their own jobs.

Tony Schwartz: A very pervasive thought among coaches is that special exercises will disrupt the motor skill. Why is this false?

Dr. Yessis: I don't like the term disrupt. You never want to disrupt the motor skill, but you do want to modify it by making changes that can be easily incorporated in the total skill. Let me be very clear on this: specialized exercises definitely alter the motor skill, but that isn't a reason not to do them. On the contrary, it is a very good argument for why

they should be incorporated into the training of all athletes. I would argue that if it's not going to modify the skill, then why do it? Swinging a bat faster or running faster is a modification of the skill, but what athlete wouldn't want this modification?

Changes in technique need to be very small and gradual so that the changes are easily incorporated. Most athletes need to have their technique changed in some way in order to optimize performance. It is true that a change in technique may make the athlete perform worse initially, but over the long-term they will greatly improve. This is why technique needs to be corrected in the off-season, but never in-season. This will ensure that the new motor patterns are ingrained and will allow the athlete to perform at a higher level than he did in the previous season.

I would like to point out that as technique is corrected with specialized exercises, you are also improving speed, strength, or some other physical ability that is necessary for the sport. For example, if I analyze the film of a wide receiver and notice that his knee drive is weak going into the fourth quarter, I may have him use the knee drive exercise for several short sets with about 30 seconds between sets. This type of protocol not only works the muscles in the correct range of motion, but also works the correct energy system. In this way we can be very specific so that the training produces effects that clearly help on-field performance.

The point is that we are trying to make athletes better. If they continue to do the same thing year after year, then they aren't going to get any better. An example I like to use is the Model-T. When the Model-T came out, people were very pleased with it. And why not, there was nothing wrong with it. It could have been better, though. Luckily, the engineers that worked for car companies did not have the same attitude that many coaches have, or we would all still be driving around in Model-Ts! The engineers had to modify the initial model so that the end product could be far superior to the initial model. This is what we want to do with the athlete.

Tony Schwartz: Interesting analogy; I never thought of it that way. Along the lines of modifying the motor skill, I have also heard coaches claim that making the athlete cognitively aware of his technical deficiencies will cause the athlete to over-think the action and therefore make the action slower. What are your thoughts on this?

Dr. Yessis: Learning anything is a process. You definitely need to think when you first learn something. But over time these processes become automatic, so that by the start of the season the skills should be intuitive.

Again, in the short-term, it may negatively impact performance, but the long-term results will speak for themselves. And again, because of the potential short-term negatives you don't change technique in-season. The athlete should have technique down before the season begins.

Your smartest athlete is your best athlete, even if coaches don't believe it. An athlete needs to understand what and why you are doing something in order to learn most

effectively. But once the season starts, the questions should be answered and the athlete should be left to perform.

That is what I attempt to do in my Explosive Running and Kinesiology of Exercise books, as well as my other books. I give you the “why” behind the various exercises and methods. The books are simple to read, but you have to read and apply the concepts in them to see the benefits. If you really read the books and correctly apply the concepts then you will without a doubt improve your performance. Nonetheless, people still have a hard time comprehending and accepting these concepts since they have never really thought about technique. People always think that if they just bench and run more they will be better athletes. These are the types of misconceptions that I hope we can begin to change.

Tony Schwartz: I hope so as well. So few coaches are utilizing the important tool of specialized exercises in favor of more running or bench pressing; it is truly sad for the athletes. Then again, even among coaches who do use specific exercises in the training of their athletes, many believe that these exercises should be reserved only for the elite athlete. Why do you believe this line of thinking is outdated?

Dr. Yessis: Specialized exercises were originally developed in Russia for elite athletes, and should be primarily used as such. However, in the U.S. we do not teach technique the right way. A typical technique unit in the U.S. is 2-3 days in P.E. For example, a typical tennis unit would consist of covering the forehand on Monday, backhand on Tuesday, and the serve on Wednesday. After this, they start the tournament. This is not how you teach technique. Technique is much more complex than what can be learned in 2-3 days.

Because of this situation, most U.S. athletes need to improve their technique, and specialized exercises can be a great way to do this. Athletes learn and correct part of the skill and are then able to incorporate it into the whole skill. The intensity of these exercises is less than that for an elite athlete, but some of the exercises are the same. Additionally, specialized exercises will comprise a smaller percentage of the total training volume for a beginner than they will in the training of an elite athlete. In addition to improving technique, these athletes will also be improving their speed and strength in the correct range of motion. This is why I believe specialized exercises have an application for novice athletes as well.

Tony Schwartz: Great information. Thank you for your time, Dr. Yessis.

Dr. Yessis: Thanks for having me.

For more info on specificity and the training of athletes, check out DrYessis.com for books like Explosive Running and Explosive Basketball. Be sure to check out UltimateAthleteConcepts.com for the DVD of the seminar with Dr. Yessis and Dr. Verkhoshanski.