

How to Develop an Effective

SPEED Training PROGRAM



Latif Thomas
Athletes Acceleration Inc.

ABOUT THE AUTHOR

Highly regarded as one of the top speed coaches in the country, Latif is the Co-Owner of Athletes' Acceleration, Inc., a leader in sports performance consulting, coaching and training resources for fitness professionals.



A former All East Sprinter while attending the University of Connecticut on a track and field scholarship, Latif is certified by the National Strength and Conditioning Association as a Certified Strength and Conditioning Specialist (CSCS) and is USA Track and Field Level II Certified in the Sprints, Hurdles and Relays. In 2005, he was voted the Massachusetts State Track Coaches Association Coach of the Year for his success in developing countless champions and record holders at the conference, division and state levels. Co-creator of the internationally acclaimed Complete Speed Training Program, Latif has excelled at simplifying program design and technical improvement in order to facilitate greater results in his athletes.

Please also pick up your FREE report on, “The Secrets to Dominant Speed for Athletes” at www.CompleteSpeedTraining.com

This information in the Speed Training Program Design ebook is for education purposes only. It is not medical advice and is not intended to replace the advice or attention of health-care professionals. Consult your physician before beginning or making changes in your exercise program, for diagnosis and treatment of illness and injuries, and for advice regarding medications.

**Latif Thomas, CSCS, USATF II
Athletes' Acceleration Inc.**



PROGRAM OVERVIEW

This report on program design is to help give you a basic, yet detailed, look at how to set up your programs for you and your athletes.

However, it is not meant to be the definitive text on periodization, I am not trying to reinvent the wheel or promote myself as the next Tudor Bompa. (If you don't know who that is, you'll learn a great deal from this series!)

Thus, this information comes from a variety of sources.

My purpose is to provide you with information and resources to help you create better annual plans for your athletes. However, coaching is a science *and* an art.

If your goal is to simply cut and paste sample programs into your own program, you are not putting in the same effort you expect from your athletes.

Therefore you won't get very much out of this, or any, training advice.

It doesn't matter whether you coach team sports, run 4, 8 or 12 week groups or train yourself, if your season as a whole isn't organized following specific training guidelines, then neither you or your athletes should expect to see consistent or continuous improvement.

No periodization at all is just making things up as you go along. And I can't think of many situations in life or athletics where such a philosophy is a recipe for success.

The information here will be useful to you as a supplement to your www.CompleteSpeedTraining.com

Having a large inventory of effective drills and exercises to pull from for the various phases and elements of training is, quite frankly, essential to the continued success of your athletes.

Now, let's begin our look at training theory. I find that one of the biggest misconceptions regarding training theory is that there is some universal method of training that magically applies to everyone.

There isn't.

"Having a large inventory of effective drills and exercised to pull from for the various phases and elements of training is, quite frankly, essential to the continued success of your athletes."



Speed Training PROGRAM

There are multiple paths to the same goal. The problem comes when coaches aren't on any particular path at all. Instead they just wander aimlessly toward some poorly defined end point, making things up based on their mood that day. Science is not used in any of their training decisions.

This is not to say that experience and tradition don't have a role in program design, they do. But they shouldn't be the foundation of the program.

On top of that, let's not make training theory and program design more complicated than it is. Adding depth and detail for the sake of being fancy will take away from basic training principles that serve as the glue holding the plan together.

In the past, I would try to add as much detail, charts, graphs and testing protocols as I could think of to my programs. I thought this would get better results.

Well unless you coach full time, you don't have time for that. And all it will do is add more to an already full plate.

Just like I always advocate the 'train smarter, not harder' philosophy with training, I also employ the 'coach smarter, not harder' mindset when it comes to organizing and planning training.

Don't forget, a well thought out program doesn't absolve you from having to teach running mechanics, drills, etc. In fact, it makes those issues all the more important.

But you should still factor in the amount of time you have to commit to program design before you get in over your head. I always wish I had more time to add more details to my training programs, even the ones that result in state champions.

There is no such thing as the perfect plan. Plus, any plan must account for the fluidity of your season. What I mean is, s*** happens.

Your athletes may be excessively sore, rain may keep you inside, cold weather could make it unsafe to get that speed workout in, a competition may get rescheduled, an injury could occur, school could get cancelled, etc., etc.

All of these things will force you to adapt to the current situation.

That is why it is so important for you to take the time to learn how and why certain things affect athletes. **You need to be able to make changes to your training plan on the fly without it throwing your entire season into chaos.**

"I employ the 'coach smarter, not harder' mindset when it comes to organizing and planning training."



Speed Training PROGRAM

If you're just cutting and pasting a sample program and calling it your training plan, what will you do when forced to improvise? Don't get me wrong, copying a well designed sample plan is a great start. But you must use it as a means to an end, not an end of itself.

It's the same reason why I don't write out every workout of my season in advance. I learned the hard way that once your schedule gets thrown off once, that whole plan has to be amended. You'll need to plan what you want to get done in detail and in advance.

But always have a plan B that affects the body the same way as Plan A. With any session, microcycle or mesocycle, we're training energy systems to elicit performance results. So I don't look at the workout itself (10x30m @100% or 6x200 @ 85%) but the energy system that the workout taxes (ATP-CP or Anaerobic Glycolytic).



GETTING STARTED

OK, so that is a very quick overview covering some of the things you should be thinking about as you begin to acquire new information.

You'll want to go out and start making changes in your program and in your training.

This is the art of coaching. Learn something new, apply it to your athletes and see what works for your situation and athletes and what doesn't.

I have found that one of the biggest problems in having this discussion is that of different coaches using separate terms to describe the same things.

Therefore, before we really get going, it is critical that we be on the same page regarding our use of terminology. I will be using terms that may not be familiar to you and that could cause confusion.

So, check out this link and familiarize yourself with the terms and definitions so that we don't encounter any unnecessary road blocks along the way:

<http://www.completetrackandfield.com/track-definitions.html>

Bookmark that page, print it out or add it to your favorites, but make sure you can access it at your convenience. But make sure you read it all. Now, any well designed program revolves around one central principle. Without it, you can't possibly devise effective training in the long-term or the short term.

What is that one overriding principle? The End Result. What is the goal of your training? What are your athletes training for? Is it to win the Superbowl? Qualify for the post season? Peak for the State Championship? You can't ask for directions if you don't know where you're going. Designing an effective program is no different.

I want you to think about a few things. What is your end goal? Is your current or past training designed specifically to help you or your athletes be at their best when that day arrives? Or does erratic, inconsistent training prevent you from getting there in the first place?

When you really sit down and think about it, how organized and specific is your athletes' training?

Next we're going to break down the most important principles involved in designing an effective training plan. At the collegiate level, most coaches have every aspect of their seasons planned out in advanced. Most college coaches couldn't imagine 'winging' it.

The idea of running, to quote my friend John Doherty, 'Junction Boys' style training would never realistically occur to them.



Speed Training PROGRAM

In case you don't know what Junction Boys training is, watch the end of most football practices. It's when coaches run athletes into the ground just because it's what they did when they were in high school. It pretty much consists of running wind sprints until you can't run anymore.

This, of course, is an inferior way to develop athletes. However, this style of coaching is unfortunately less the exception and more the rule.

I am sure that you have heard of or even know coaches that decide what they are doing for practice that day, on their drive over to the practice facility.

Now don't get me wrong, I have lived in New England most of my life so I know that you need to be able to make changes on the fly. Weather can cause problems to your ideal practice for that day so you need to be able to make adjustments. Even the way your athletes feel on that given day is going to change what you can do for practice.

You can make adjustments to your training plan but you must know what the goal or theme of the workouts are and what you want to get accomplished in order for you to reach your end and desired result.

The key is to actually have a plan set-up in advance. Volumes, intensities and the entire program should be set-up and in place before you ever set foot on the practice field. Over the course of this series, you'll understand exactly how to do that.

But before you can begin creating a program for yourself or your athletes, there are certain questions you have to answer.

Let's examine a few of those questions now:

What are the demands of your sport and, thus, the speed, strength and conditioning requirements of your athletes? Without having a clear understanding of this foundational question, you can't possibly design an effective program for anyone.

Let's break this question down a little bit further so that there is no confusion. You shouldn't read any more of this series (or conduct a practice session or workout) until you have clearly outlined these parameters.

"You can't ask for directions if you don't know where you're going."

"Volumes, intensities and the entire program should be set-up and in place before you ever set foot on the practice field."

Speed Training PROGRAM

The following questions will help you understand the mindset you must bring to planning and organizing your sport's practice and training activities.

1. **How long does a game/competition take?**
2. **What is the rest period between plays/events?** Would the rest intervals for a track sprinter who may have an hour or more off between events be the same as a football player who only has 30-40 seconds between plays?
3. **What is the ratio between sprinting, jogging and walking during a competition?** The training plan for a 55 meter sprinter and a soccer player cannot be exactly the same. One athlete may be competing for up to 90 minutes, the other for less than 7 seconds.

Your soccer and field hockey players need to be able to sprint at short bursts then go into a jog, repeatedly, for an extended period of time. Would interval training be more useful for your athletes or continuous slow distance training? Generally I see these coaches focusing on the latter.

How about speed development? Acceleration is critical to the success of these athletes. But how often do coaches specifically build this necessary skill into their programs? In my experience, not often.

4. **What type of 'speed' do your athletes need to succeed at their sport?** There is a difference between just doing some speed work and actual speed development.

The former is what is occasionally done in some programs. The latter is specifically designed to foster adaptations that improve the skill of sprinting over time.

This is why I advocate a 'short to long' program with speed development. Back to the question: Do the demands of your sport focus on acceleration like soccer, football, lacrosse and basketball? Or does the ability to maintain near top speeds determine success, like for a 200 meter sprinter? Acceleration development and maximum velocity training must be addressed differently.

What about speed versus speed endurance? Faster top speeds can only be developed when there is no presence of fatigue. While both skills need to be trained, some sports require athletes to be able to quickly accelerate or change directions while under a state of fatigue.

After all, there is a world of difference between these two seemingly similar workouts:

- A.) 10x30m @ 100% intensity with 3 minutes rest
- B.) 10x30m @ 100% intensity with 30 seconds rest



Speed Training PROGRAM

One will improve an athlete's ability to get from point A to Point B in the shortest period of time possible. The other will improve an athlete's ability to repeatedly get from Point A to Point B in the shortest *average* time possible, with decreasing difference between the fastest and slowest times.

5. **What sport specific and speed specific skills must be factored into your training plan?** We'll go into this in much more detail when discussing training inventories, but it is worth mentioning here.

How many times in a game do your basketball players or volleyball players have to jump? How many times in a row will they have to jump in most situations?

Many coaches will have these athletes do sustained vertical jumps for periods of 30+ seconds as the sole means of improving specific 'jumping' or 'vertical leaping' ability.

But how many times do these athletes have to jump in a row?

Two, three *maybe* four if they are a Dennis Rodman style rebounder? Wouldn't they make better improvements to their maximum vertical leap height by practicing a few jumps at full intensity, then resting? How does jumping endurance help an athlete out rebound their opponent or spike the ball in a single effort situation?

If my team does Workout A and yours does Workout B, whose athletes are going to succeed in getting more rebounds, blocks or kills over time?

A. 4 sets of 5 jump squats with 3-4 minutes rest.

B. 3 sets of 30 seconds sustained jump squats with one minute rest.

From here we can keep adding details to the training demands such as looking at the energy system and metabolic demands (we'll get into all of that later). But when you use common sense, it really isn't that complicated. Now that you are beginning to understand the specific demands of your sport, we have to look at two things in order to identify why this process is so important to athletic success:

1. **Why we train in the first place**
2. **What organized training actually does for the body**

While conclusions made during a discussion of these two issues may seem painfully obvious once explained, one only has to look at the lack of organization and forethought behind most strength and conditioning programs to understand that such issues are hardly being taken into consideration when most plans are being created. That is why, when in doubt, we go back to the basics. So, why do we train? At its most basic level, we train to overcome fatigue. During the course of any competition, athletes are going to get tired.

Speed Training PROGRAM

By using certain specific training modalities, athletes can learn to overcome that fatigue, or at least delay it long enough to succeed.

Here is an analogy that fits:

The 100 meter dash. Many people think (or are taught) that you will experience the greatest success in this race by running the entire distance as hard and as fast as humanly possible.

However, that is just not possible. (You'll understand why when we discuss energy systems) In a nutshell, a sprinter must 'rest' or 'float' during the race to conserve energy. This is a subtle skill that takes patience and experience, but is nonetheless true. By the midpoint of the race, most athletes are, in fact, slowing down.

When you step back and look at the entire picture, the 100 meter dash, like most competitions, is won by the athlete who *decelerates the slowest*.

By using certain specific training modalities, the 100 meter runner can learn to overcome some of the fatigue that sets in by training him/herself to decelerate slower than the competition.

Now, it is the job of the 100 meter coach to factor in this fact to the athlete's training by understanding the demands of the event. Of course slowing down the process of slowing down is just one of many elements of the 100 meter dash. But without specifically addressing this fact, athletes can not reach their potential.

So the coach must consider what methods he/she can use to address this issue, one of many limiting factors that must be understood and dealt with in order to develop the fastest possible athletes.

Another reason we train is to perfect technique.

Repetition of a *properly* executed skill will train the athlete to perform automatically, a critical skill when considering the amount of information athletes must process during the course of any competitive situation.

This too must be addressed in a specific fashion worked into the framework of the overall training plan.

But the main reason we train, above all else, is to improve performance. Often, to improve so that we are competing at our best at the end of the season for the state championship, playoff tournament, Super Bowl, etc.

"The main reason we train, above all else, is to improve performance."

Speed Training PROGRAM

But other times, especially in team-based sports like football and basketball, athletes must be in top shape at the start of the regular season. The season is all about maintaining all the improvements that were made in the preseason.

This difference, however, in no way changes the approach that should be taken to creating the speed development program.

Regardless of the sport there are clearly many factors that go into a season. **Your job is to ensure that your training program allows athletes to be at their best when the time comes.** The best way to maximize the likelihood of this occurring is to organize your training by carefully following the framework that is being laid out in this series.

The next issue of importance deals with what organized training techniques actually do to the body, especially in comparison to the generally unorganized training that most coaches employ. This will go far in helping to understand just how significant the level of improvement can be when incorporating organized skill development into each microcycle, mesocycle and macrocycle.

As far as demands of a speed training program I think it is important to first look at your sport and where the focus is during the preseason and regular season.

We can simply break this down into two categories:

1. **Team sports**
2. **'Individual' sports**

Team sports like football, basketball and soccer are going to have to focus the majority of speed and conditioning development in the preseason. Once the season starts the focus is likely going to be more on maintenance of the improvements made during the off season and preseason as opposed to specifically trying to make significant speed gains during the competitive season.

Don't forget that competitions must be factored into the overall conditioning plan as well.

The problem I see with most coaches of team sports is that there is no organized periodization or progression of conditioning in the preseason or regular season.

This is why there is often a rash of burnout, mid season performance regression (due to overtraining) and late season injuries.

Even worse, I can't count the number of times I've gotten athletes from other sports in their next season who needed excessive rest and modified training to help them recover from the beatings their unorganized coaches gave them during the previous season.

The techniques you'll learn here should prevent that from happening ever again.

On the flip side you have *'individual' sports*, which we'll basically consider track and field.

Speed Training PROGRAM

Here we often train through early season competitions with the goal being to have athletes run their fastest at the end of the season, instead of the beginning of the season like in team sports.

The training principles for both categories are the same, it is just the structure that is going to be different.

Now, before you can begin creating a specific training plan you have to **get organized**. Early in my career I chose to skip this part because I was lazy and ignorant (by ignorant I mean uninformed, unaware) but invariably it would come back to bite me when circumstances forced me to be more flexible in amending the plan. And believe me, even the best plans have to be modified for a variety of reasons.

Here is a list of 7 steps that must be followed **before** you sit down to write out the specific details of your overall plan.

Some of you will groan at the amount of time and thought that goes into a well crafted speed program, but that's why your athletes aren't fast and mine are. If you take the time to learn this process it gets faster and easier.

I also suggest you start taking notes on the answers to these questions as it will make your life much easier as we break them down further as we progress through this series.



7 STEPS FOR ORGANIZING YOUR PLAN

1. Establish a clear, specific goal for the training plan.

This is the same whether designing a plan for an individual person or a team.

Is the goal to improve your 40 by .3 seconds by the start of the season or improve the team's average 40 time by .2 before the first game?

Do you want to win a State Title in the 100 or place 3 athletes in the finals at the League Championship this spring?

If you set generic goals like 'make the team faster' then you won't accomplish them. You have to set your intention on a specific goal by focusing on the end result and then working backwards.

As you'll see later this is one of the most overlooked and also difficult components of the training plan. But if you don't start with the end goal and end date and work backwards, you can't get a true understanding of how to progress your training.

2. Make a detailed analysis of the demands of your sport.

A football player and a soccer player aren't going to be on the same speed training program. Is there a significant aerobic demand to your sport? How about agility and change of direction skills? Does your sport focus on acceleration or top end speed? Do your athletes hold, swing or carry an implement in their sport?

3. Establish a list of qualities and abilities needed to succeed in the specific speed applications of your sport. This should be based upon your analysis of demands.

For example:

1. Absorb impact and then accelerate.
2. accelerate while in a state of extreme fatigue
3. develop consistent acceleration pattern out of blocks
4. hit a moving ball while running at top speed

4. Create a list of specific training activities. This list should be designed to address and develop the identified list of qualities and abilities.

For example:

Specific drills teaching athletes how to take a hit and effectively accelerate fartlek runs and whistle workouts where athletes simulate the types of starting and stopping while fatigued that they'll experience in a game drive phase development and block work session to teach a consistent, explosive sprint start drills teaching athletes techniques for striking, kicking or dribbling the ball while running at full speed.

Speed Training PROGRAM

5. Create a list of general training activities. These should be designed to prepare the body to undertake more specific training, when specific training is considered too advanced for the learning athlete.

For example:

1. an athlete must learn how to separately absorb contact and learn to accelerate before the actions can effectively be combined
2. athletes must develop their aerobic power, lactic capacity and acceleration ability before they can succeed at combining those three elements successfully.
3. athletes must develop a consistent acceleration pattern, understand the drive phase and perfect running mechanics before successfully developing a fast start
4. athletes must learn how to kick, strike or dribble the ball, as well as learn acceleration and top speed mechanics before they can combine these skills

6. The list of both general and specific training activities must be organized in a logical fashion into a valid training program.

With any speed program, skills must go from general to specific, basic to complex.

Athletes must establish general conditioning before doing complex lactic acid workouts.

They must develop the ability to accelerate before doing speed endurance.

And beyond that these skills must be broken down further as well as addressing other biomotor abilities that we will get into shortly.

7. The training program must actually be administered and should undergo constant evaluation.

Even the best plans must be modified. Weather, injuries, and a myriad of other situations and circumstances will arise that force you to change what you are doing.

Sometimes something you plan just plain doesn't work.

That is why a detailed plan, as well as note taking and testing, will give you a good idea if your plan is progressing as expected.

So start going through these 7 steps and taking specific notes on how they can be specifically applied to your team, sport or training.

Because even these 7 topics are just a general overview of the pre-planning behind the training plan.

Once you've established your lists and have gotten more focused on the general areas that must be developed you can start to get more specific. But first you must understand where the specificity comes from and why it is applied.



5 BIOMOTOR ABILITIES

In developing the speed of any athletes in any sport there are 5 biomotor abilities that must be developed, regardless of the perceived differences between the sport/s being trained, age, gender and skill level of the athletes.

These 5 biomotor abilities are:

1. Flexibility
2. Coordination
3. Endurance/Conditioning
4. Strength
5. Speed

As I said at the end of last week's article, there are 5 biomotor abilities that must be trained in order to maximize the performance of any athlete.

And this is true regardless of sport, age, talent or experience.

It is important that these 5 abilities be trained to some degree in every workout. However, depending on time of year, sport and individual training goals, some will need to be trained more frequently than others.

FLEXIBILITY

The need for flexibility varies by sport and event as well as from muscle group to muscle group.

However, rarely have I ever seen an athlete who appears to be 'too flexible.'

However, lack of flexibility is an ever present issue.

Why flexibility is so important has been covered in the 7 part series you originally signed up for, so I won't bother being redundant here.

But for our purposes there are two types of flexibility that we must address in our program:

1. Static flexibility
2. Dynamic flexibility

These can be addressed in different ways, many of which are covered in the Complete Speed Training program.

Simply, the need for static stretching before a workout or competition is a subject for debate and, like many training factors, is a matter of preference.

1. Flexibility
2. Coordination
3. Endurance/
Conditioning
4. Strength
5. Speed



Speed Training PROGRAM

However, static stretching as the sole means of improving mobility before a game or practice is a recipe for disaster and a sign of sheer laziness and complacency by the coach who uses it.

Give your athletes a short period of time to stretch before beginning a dynamic warm up if need be, but dynamic mobility exercises must be the foundation of any practice or competitive situation.

Excessive static stretching is known to decrease short term strength and power output so it can not be the primary method of preparation for activities requiring strength and power output.

Save static stretching for after practice. This is where the biggest gains in flexibility will be made. Muscles are warm and core body temperature is raised. There is less chance of sustaining an injury this way.

For a library of flexibility options that break 'dynamic' and 'static' stretching into much greater detail and options, refer to the 'Pre Competition' DVD of your [Complete Speed Training Program](#).

COORDINATION

In my opinion, lack of coordination is one of the single greatest limiting factors to the success of young athletes, even the 'best' ones.

Development of coordinative abilities is a requirement for success in sports. According to Tittel, these abilities include:

1. To spatially orient oneself
2. To kinesthetically differentiate
3. To react
4. To keep rhythm
5. To maintain balance

In addition, coordinative ability develops before sexual maturity. Thus, it is believed that these skills must be developed during pre-pubescence since they are seen to regress during puberty.



Speed Training PROGRAM

There are an infinite number of activities that develop the coordinative abilities including, but not limited to:

- change of direction drills
- agility ladder work
- dynamic exercises
- hurdle mobility
- plyometrics
- proprioceptive work
- speed drills
- medicine ball throws
- strength training sport
- specific activities (block work, batting practice running routes, running approaches, kicking a ball, etc.)

All of these activities, when structured correctly within the overall macrocycle (yearly plan) will develop the coordination required to succeed on the track, court or field. Refer to your [Complete Speed Training](#) program for a considerable number of examples of each of these activities.

ENDURANCE

Endurance is the capacity to maintain a certain degree of speed in the presence of fatigue.

Specific endurance requirements vary by sport.

As I've said on countless occasions, sending a football player or 100 meter runner out to run 3 miles is an unacceptable waste of time, but entirely appropriate for a soccer player or miler.

Knowledge of general physiology is a requirement for the coach to understand the type of endurance required for their athletes and sport.

Generally, we can break down endurance into two broad categories:

1. **General Endurance**
2. **Specific Endurance**

General endurance is ultimately the ability to maintain a level of performance for an extended period of time. It includes the neuro-muscular, central nervous and cardio-respiratory endurance systems. General endurance is often equated with aerobic endurance because of its long term nature.

Specific endurance refers to the unique endurance required to perform activities from playing football to running the marathon. As I said, different sports require different specific endurance and knowledge of physiology allows coaches to design training specific to the needs of their athletes.

Speed Training PROGRAM

Check out this article on specific types of general endurance training for a more detailed look at how to design your conditioning and recovery workouts:

[Conditioning for Sprinters](#)

Again, refer to your [Complete Speed Training](#) program for more details about general and specific endurance.

STRENGTH

Strength is another requirement of optimal speed that is often either ignored or done incorrectly in most programs.

Common sense tells us that athletes can't expect to get faster if they don't get stronger. This is simply due to the fact that they will be unable to move their bodies forward due to limitations in their force output.

There are, of course, different types of strength.

As an overview of the term, absolute strength is the ability to produce great force, regardless of the speed of movement. This quality is fundamental to all types of strength and governs the body's ability to control internally generated forces.

Power is the ability to produce force quickly. Overcoming one's bodyweight quickly is critical to acceleration, the fundamental element of speed development.

Think of power as a combination of strength and speed. Progress in developing these two areas as part of power development training.

General strength is the ability to control one's body and overcome internal resistance. Think of it as a combination of strength and coordination. This is a critical area of development for young (high school and below) athletes who either lack this type of strength or focus on developing other areas and neglecting this area, at a cost.

Use general strength for postural stability, a substitute for weight training, endocrine system development, coordination and recovery.

For detailed breakdowns of general and specific strength as well as power development, refer to the Hardcore Conditioning and High Powered Training DVDs in your [Complete Speed Training Program](#).



Speed Training PROGRAM

SPEED

Speed, as you know, could be the focus of, say, an entire ongoing weekly newsletter.

A traditional definition of speed is:

'The ability to move the body and/or it's parts quickly.'

As with all training, I look at the demands of the activity in regards to it's energy system requirements.

This, as before, requires a knowledge of physiology beyond the scope of this manual.

Generally, we can break speed down into categories. Keep in mind these are general guidelines and vary by athlete:

- **Acceleration: 0 - 40 meters (0 - 5 seconds)**
- **Maximum Velocity: 40 - 80 meters (5 - 8 seconds)**
- **Alactic Short Speed Endurance: <80m (with shorter recovery periods)**
- **Glycolytic Speed Endurance: 80 - 150 meters**
- **Special Endurance I: 150 - 300 meters**
- **Special Endurance II: 300 - 600 meters**

Outside of track and field, most athletes will not focus much time and energy beyond speed endurance.

But as I said, this is an almost unfair simplification of 'speed'.

So refer to your Complete Speed Training program for greater details regarding how to incorporate speed elements into your program.

Take the time to consider how these 5 biomotor abilities should factor into your athletes' training.



6 FUNDAMENTAL TRAINING PRINCIPLES

Recently I was reading a forum discussion about defining various elements of speed, strength, power, etc. The post was about how different people use wildly different terms and definitions to define the same concepts. And I agree that we have far too many definitions for common training terms. Since I have no aspirations of reinventing the wheel or trade marking any new terminology, I think it's important that we all speak the same language.

So, once again, here is a link to some common training terminology that I will be using to define certain elements of the training plan.

It's not a complete list, but certainly each term should be one that you familiarize yourself with:

<http://www.completetrackandfield.com/track-definitions.html>

Last time we looked at the 5 biomotor abilities.

One of the main problems that many coaches have in training speed is that they are looking at the topic through a very narrow lens. Maximal speed development is far more than just running some 40s.

With biomotor development, every single microcycle should address all 5 biomotor abilities to some extent. But where you are in your training plan will determine the degree of emphasis that should be placed there.

Everything you do in your training must be done for a reason. We live in a universe based on order. Everything that happens happens for a reason that, given enough time, can be specifically identified.

That is why each element of an effective speed training program must be based, ultimately, on sound scientific and physiological principles.

At the same time, don't be a robot. Coaching is both a science *and* an art. My speed training philosophy pulls from more coaches and sources than it is worth mentioning here. But the point is that I don't *just* do what one coach says or *just* regurgitate someone else's theory. I study everything. Then I test it out and see how it works with my particular athletes. Some I keep, some I get rid of. But that is how you develop your own system of training.

Now that I'm done with that brief rant, there are 6 fundamental training principles that I think should be addressed so far as continuing to build a foundation for understanding how you should approach designing a speed training program for your athletes.

1. Adaptation
2. Individualization
3. Overload
4. Restoration
5. Reversibility
6. Specificity



1. ADAPTATION

In essence, adaptation is the adjustment or enhancement of fitness ('fitness' being a very general term for the sum of the entire training process) that comes from your specific speed training protocols. Proper adaptation is the effect of relatively stable changes caused by the training sessions you implement.

Examples are the reduced resting heart rate seen following an endurance training program and the increase in muscle fiber diameter after a period of strength training (Lamb 1978)

As I said before, everything happens for a reason. **The effectiveness of your athletes' adaptation stems from the effectiveness of your training.**

Keep in mind, however, that rate of adaptation depends on such factors as sex, genetics, biological age, training age, level of fitness and motivation.

Such factors (called 'biovariability') must be considered when establishing the goals of your speed training program.

2. INDIVIDUALIZATION

This is where you adjust your training methods to the particular adaptive ability and response of one specific athlete.

This has to be done as much as possible in order to get the best results. Biodiversity is a very real, very obvious factor. Giving all your athletes the same generic program to follow will result in the same generic results.

It cannot be emphasized enough that you must individualize your program to some degree.

If you're working 1:1 or with small groups, the program is easily tailored to the individual needs of these athletes.

I understand first hand, however, the difficulties presented in training the speed of a team of 30,40 even 50+ athletes and still individualizing the program.

There are solutions to this that I will get into later, but such things as testing, goal setting meetings and organization are the first steps toward getting the most out of your athletes. Even breaking goals and expectations down based on training age, fastest times, strength levels, etc. will produce far greater results than the 'one size fits all' ideology employed in most programs.

Yes, individualization makes your job harder. You have to be more organized and efficient in your coaching. Fundamentally this is where you separate yourself from the rest of the pack.



3. OVERLOAD

Overload can be termed as any training stimulus significant enough to elicit an adaptive response. For athletes to continue to adapt, said stimulus has to be increased along specific lines. The degree of this increased load can be measured by:

1. **Volume**
2. **Intensity**
3. **Density**
4. **Duration**

Volume can be measured by the number of repetitions performed, the total distance run or the total weight lifted. For example:

- 10x30m = a volume of 300 meters
- 5 sets of 5 squats at 225 pounds = a volume of 5625 pounds

Intensity is the percent of maximum performance that a particular exercise is performed. An athlete with a personal best in the 100m dash of 11.0 seconds who performs one run at 11.58 seconds equals an intensity of 95%.

Density is the amount of recovery between bouts of exercise, but in relation to the amount of time said exercise takes to complete.

An interval workout where an athlete runs for 45 seconds and jogs for 90 seconds is less dense than a workout where the athlete runs for 45 seconds and rests for 45 seconds.

Duration relates to the amount of time the athlete is actually exercising as opposed to recovering from that exercise.

A sprinter's interval workout of 10x200m may have a duration of 5 minutes even though the workout lasts 30+ minutes while a speed workout 6x50m lasting the same length of time may have a duration of only 30 - 40 seconds.

It is important to consider all these factors and their impact on general adaptation when designing your speed training program.

4. RESTORATION

Restoration, or recovery, is the *aided* return of the athlete to his/her normal state through means such as massage, nutrition, hydration, recovery work, rest and relaxation.

The term also refers to the amount of time required to go from the fatigued post workout state to the point of super adaptation.

For example, it may take 48-72 hours to fully recover from an intense neuromuscular training session.



Some coaches have a mindset that if athletes are not relegated to the point of complete muscular failure, then they have not worked hard enough. This 'no pain, no gain' mindset leftover from the 1970s is truly disturbing to see.

Adaptation takes place not from the workout itself, but from the effectiveness of the recovery mechanisms employed between (in the case of speed development) neuro days.

5. REVERSIBILITY

Also known as 'detraining', this is the loss of adaptation due to either lack of or inadequate training stimulus.

How long it takes to start to 'get out of shape' depends on many variables and is of particular concern in track and field athletes during the peaking phase.

For example, aerobic enzyme production begins to decrease after just 24 hours. Yet strength may be maintained for several weeks of inactivity, though muscle fiber size will decrease fairly quickly.

6. SPECIFICITY

Once you lay a foundation of general fitness in the preparation phases, your training must evolve toward the specific speed requirements of your athletes and sport.

While general conditioning will have positive effects on other systems, maximal training response comes from training designed to stress the systems specific to that sport or event, at the intensity of and duration of the event.

This is why you can't run slow all the time and get fast.

An example would be improved reaction time and acceleration following a series of starting practice sessions.

By considering how these factors will affect your athletes, you are in a better position to design a specific, individualized and effective speed training program for your athletes, regardless of the degree of biovariability within the group.



3 ENERGY SYSTEMS

We need to look at the energy and body systems that we're training when trying to develop the speed of our athletes.

I try to look at training from a slightly different perspective.

Instead of designing training based on trying to guess appropriate sets, reps, density, etc. I consider the theme of the training session that provides the overview of the goals I'm trying to accomplish during that particular mesocycle, microcycle and/or training session.

From there, I create workouts by taxing the energy or body system I'm training in a way that will elicit the results I am looking for.

By understanding how these systems work and how a particular prescription of exercise develops that particular system/s, I can facilitate more effective adaptations.

First, we'll briefly look at the energy systems we're working within our speed development.

There are three that we have to be concerned with.

1. **ATP/CP System (which we've already discussed)**
2. **Glycolytic System (commonly called the lactic acid system)**
3. **Aerobic System**

Ultimately these systems describe the metabolic pathways available to replace ATP concentrations.

From a pure speed development standpoint, we are going to be primarily concerned with the first system.

In the glycolytic system, as hydrogen ion concentrations increase, enzyme activity decreases and glucose or glycogen breaks down to pyruvate to provide energy.

In short, this is the burning, lactic acid feeling that you get during speed and special endurance runs.

That pain is essentially the muscles shutting down.

If you've ever run a 400m dash or seen the last 100m of that race, you have seen the full effects of this energy system. We call it 'rigging' short for 'rigor mortis'.

The name says it all.

I'm not going to get into the aerobic system here, except to say that when it comes to most speed development programs (though I may be preaching to the choir here) this system gets far too much attention.

But to truly design an effective program, knowledge of your sport/event and how these energy systems affect success in that sport/event is critical to making improvements.

4 BODY SYSTEMS

The next topic requiring some attention is that of understanding the 4 body systems that must be developed with your training.

There are actually 5 body systems, the first of which we call the 'energy systems' and they comprise the three systems I just highlighted.

The Neuromuscular System

This system consists of the elements of the Central Nervous System that control skeletal muscle activity as well as muscle tissue that is involved in creating force production during athletic performance. The degree of effectiveness of the Central Nervous System is the single greatest factor in performance. Developing the neuromuscular system should be the most important focus of your training.

As I've mentioned on countless occasions, this system must be trained in the absence of fatigue in order to elicit the best results. Despite its importance, this system is widely underdeveloped in most programs.

The Neuroendocrine System

This system operates by releasing hormones into the blood stream during exercise. By having certain hormones in the blood stream, strength development, recovery from workouts and other metabolic functions are significantly enhanced. So certain types of exercise produce clear responses to the endocrine system where effectively designed training can result in marked improvement in performance.

The Musculoskeletal System

This system consists of the muscle tissue responsible for force production, connective tissue and the bones. It is important to note that force created and force applied are *not* the same.

The musculoskeletal system facilitates the transformation of created force to applied force.

From a training stand point, it is critical to develop postural stability as well as postural alignment in order to enable efficient movement patterns as well as prevent injuries.

The Proprioceptive System

This system's job is to sense and provide the body with information concerning body position, movement, coordinative abilities. Many movements and actions in speed development, as well as in athletic performance as a whole, are considered reflexive.

1. Neuromuscular System
2. Neuroendocrine System
3. Musculoskeletal System
4. Proprioceptive System



Speed Training PROGRAM

Thus they are reliant on proprioceptive function. Athletes who can quickly and easily respond to their body position and movement are at a decisive advantage in regards to overall skill development and therefore performance. In order to effectively and efficiently develop this system, athletes must engage in activities that challenge their coordination and balance.

Because all 5 of these systems contribute to speed and performance *all* of them must be developed. There is a level of interconnectedness between all 5 systems. So in developing one system, you will be developing others at the same time. This does not change the fact that your speed development program must address all of these systems with some degree of *planned* balance. This balance in training is just as important to overall speed gains as the development of any one system in particular.

That being said, it is important to consider the demands of your sport/event, the age (training and otherwise) of your athletes, skill level, etc. in order to determine the most appropriate balance of activities.

Coaches will often overemphasize the aerobic energy system with respect to inappropriate development of the neuromuscular system. At the same time, many programs entirely ignore the proprioceptive and neuroendocrine systems.

All of these fatal flaws in program design adversely affect speed gains and consistency of performance. According to Cliff Rovelto (2006) 'the cause of most injuries is the overdevelopment of the neuromuscular system with respect to the musculoskeletal system.'



CONCLUSION

While this text does not provide all the answers to every element of creating a well designed speed training program, it does offer many answers, particularly at the foundational levels.

When we consider that 'sport specific' training for young athletes (ages 7-18) is a mistake in the sense that the goal of any sub-elite training program is to build overall athletic ability by teaching all 5 biomotor skills, we can understand the level of similarity between ages and sports.

Of course, as I discussed in detail, there are certain obvious energy system requirements held by particular sports and event groups, but the foundational 'message' we must send our athletes is to build overall skill by progressing from the part to the whole, simple to complex.

When you apply the concepts discussed here in combination with the theories, drills, cues and techniques taught in your Complete Speed Training Program, you most assuredly have all the tools required to build a level of skill in any athlete that said athlete could not have expected to rival in any other situation or circumstance.

By applying this physiologically sound information with your own experience, your athletes will stay *a step ahead* of the competition.

To your success,

Latif Thomas

CSCS, USATF II

Athletes Acceleration Inc

Co-creator of Complete Speed Training

www.AthletesAcceleration.com

www.CompleteSpeedTraining.com

Pick up your
FREE report,
"The Secrets to
Dominant Speed
for Athletes"

at

www.CompleteSpeedTraining.com



SUCCESS STORIES

from

COMPLETE SPEED TRAINING USERS

“A must have for all athletes and coaches looking to improve speed.”

"Complete Speed Training is a must have for all athletes and coaches looking to improve speed. The comprehensive manual and DVD set outlines a straightforward step by step training program that covers all the essential elements of speed development. From beginners to advanced athletes, this training system offers several effective drills. The in-depth videos provide easy application for all coaches working with athletes in need of speed and power development. From dynamic warm-up to pure speed drills, Complete Speed Training provides a clear blueprint for success."

Brian Schiff, PT, CSCS
Owner - The Fitness Edge
Dublin, Ohio
www.thefitnessedge.cc

“I've never seen any speed product like it in my entire life.”

"From a sport speed perspective, I've never seen any speed product like it in my entire life. I seriously doubt anybody could even come close unless they steal the content right from under your noses. Incredible. I'm not trying to hype this up for a 'great testimonial', but any coach that passes the opportunity to use you guys as a resource is a complete idiot. I don't care what their 'specialty' is."

Todd Scott
Training Advisor, Men's Fitness / Muscle & Fitness Hers magazines
Owner, Results! Fitness
Resultspersonalfitness.com

Speed Training PROGRAM

“Any coach wanting to impact their program and take athletes to the next level needs to follow this methodology.”

"Hey guys, your programs are right on! I work with NFL athletes and teams on a daily basis and specifically in the areas of speed, power, coordination, flexibility, stability, and agility. It is amazing how most teams are still incorporating radically outdated and dangerous static stretching and improper warm-ups. I think your information is great and any coach really wanting to impact their program and take the athletes to the next level needs to follow this methodology. I have implemented your programs for the past year or so focusing on the warm up and getting more specific as the warm up evolves. Punters get more quality reps because they are ready to kick as soon as the warm up is complete. Running backs say their hips feel loose right from the beginning. Best of all the progressions allow for cumulative lasting affects on flexibility whereas most programs create tightness and result in injuries from not enough recovery and incorrect stretching. I plan to bring this stuff to the forefront with the NFL and change how things are being done thanks for your help. Expect some referrals from me! Keep up the good work!"

Andrew Voris

www.BodyFormbyVoris.net

“If you're serious about winning then get your hands on a copy of Complete Speed Training today.”

"Speed kills. Period. If you want your athletes getting their asses kicked then I highly recommend you stand, pat, and do nothing. But if you're serious about winning then get your hands on a copy of Complete Speed Training today. Maybe not all of your competition is researching ways to get faster, but you know full-well at least one team is. And if they get their hands on this information first...well, your kids are going to be in for a LONG day when they face them. It's simple: make the investment, get faster, win more."

Jim Labadie

President, Achieve Total Fitness, Tampa, FL

Speed Training PROGRAM

“Complete Speed Training has brought my coaching to a new level.”

“I love the Complete Speed Training DVD set. I work with some high school track runners during the summer and have seen good results using the info in CST. Some of the info in CST I already knew but the info that I did learn has brought my coaching to a new level and has helped me coach three of my clients to PR's twice in there sprints events and one is close to her school record.

It's nice to see that season speed Vets like yourselves are willing to help newbies in the business like me. I coached youth football and basketball for approx. 12 years and have won many track championships while running in Mass. for Northeastern University but that all means nothing if you're not willing to do it right and learn from the best. Thanks again for your time.”

Coach Bill McCoy
Game Time Speed
East Providence, RI

To discover more information about the Complete Speed Training System, or to get your free report, ‘The Secrets to Dominant Speed for Athletes’, go now to:

<http://www.CompleteSpeedTraining.com>

