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TRACK COACH

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The official technical
publication of
USA Track & Field

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TRACK COACH

FORMERLY TRACK TECHNIQUE

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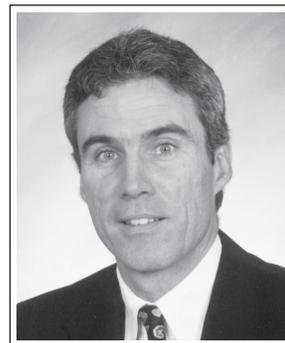
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FROM THE EDITOR

RUSS EBBETS



THE BARN

When you write with pen and paper it all happens one letter at a time. Even if your creation is computer generated the keyboard translates to the screen one letter at a time.

For the artist it has to be the same way. Although my drawing skills are limited to straight lines and a circle I see the challenge. We (the observer) see the finished picture, the contrast and blend of colors and shades. We get the impression all at once. But to the artist it is line after line, stroke by stroke, or shading to a greater or lesser degree.

If you think about it the technical aspects of coaching are about the same. The pursuit of excellence is a slow, linear process. Encouragement, effort, advice, correction, repeat. Basic movement patterns are refined into generalized techniques that with strength, maturity and goal-directed behaviors make a slow progression that can morph into a beautiful movement, a style, a personal touch.

Growing up on New York's Long Island I always envied the yearly performances of my high school counterparts from the Sunbelt states. In truth I was a bit jealous. Right or wrong, I reasoned track would be easy or at least easier if one didn't have to contend with weather. Running in the snow can be a great conditioner but it gets old, and cold, fast.

The pole vault was one of those events that seemed always to happen best in the heat. It was always Southern Cal or somebody from Texas that seemed to lead the charge. But then Rick Suhr, from Upstate New York, the Snow Belt where "lake effect" is a curse, started to have some success in a Quonset hut he built by hand.

One of the other problems with the vault is that unless a coach has a background in vaulting there was little appreciation for event nuances, much less understanding pole selection. The other problem on many teams of runners and jumpers and throwers was the singular vaulter with questionable equipment and one or two old vaulting poles. And all this was more problematic if you were a girl. For them there was always the long jump.

Situations create opportunities and needs successfully met can pay great dividends. Tim St. Lawrence made a name for himself as a three sport coach for Warwick High School

CONTINUED ON NEXT PAGE

with teams that were for 30+ years perennial league champions and often contenders with the top teams in New York State. But at some point all roads come to an end. And then for some there can be a new road.

The new road for St. Lawrence was to return to his first love, the pole vault. But remember this was the Northeast. No Sunbelt, no facility and one day St. Lawrence looked and suddenly this was no problem.

St. Lawrence saw an old dairy barn just north of the Jersey state line where the Northern Appalachians begin to peter out to pastoral foothills with panoramic views of Rip Van Winkle's Hudson Valley. St. Lawrence answered his own question with, "Why not?"

The Barn, roughly 125' long with a 25' ceiling, wide enough for two approaches and comfortable seating for 12 became the home base for the Hudson Valley Flying Circus that has in turn become a focal point of scholastic vault excellence in the Northeast.

Four nights a week with camps throughout the summer and on school vacations St. Lawrence's Flying Circus cultivates, educates and graduates the top high school vault talent in the East. Collegiate programs throughout the country are populated with Circus alum.

Make no mistake, pole vault is spoken here. From the moment you enter the facility you are in an environment where bars challenge verticality at every turn. With Bob Marley pulsing through the sound system any free spirit quickly comes to feel so much at home.

For the newbies the learning curve is steep and fast but with a firm grip the process becomes apparent just as quickly. A split screen television registers closed circuit camera angles from four directions and soon even parents are talking the lingo of lefts, pole drops, stubbies and staying tall, teaching small and the importance of drills, drills, drills.



And the driller is St. Lawrence. With a relentless enthusiasm his team approach to pole vaulting makes all involved, involved with each other, students of the discipline watching with a critical eye for what works and what needs work and then it's next vaulter up.

Learning is reinforced with pictures and posters and a running DVD loop of Olympians projected on one of the walls. Aside from the two runways are

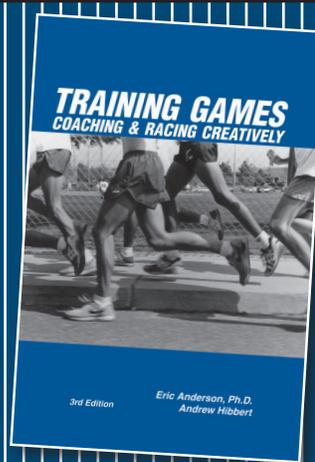
ring sets and ropes, high bars, hoops and hurdles, bungee bars and a pole selection that would make Harry Gill wonder how it all came to this.

Perched at the top of The Barn, roughly five feet from the ceiling but exactly 20'2 1/2" from the floor is a bar, just in case anyone's attention drifts. And believe me the necessary trajectory of one's gaze is UP.

In his day St. Lawrence pushed 17' when that was a mark few achieved. That road ended and now he pushes the next generation with a can-do attitude and a training environment that promotes pride, discipline and a willfulness to "make it happen."

St. Lawrence may be floor bound but to his audiences both inside and outside of The Barn he is creating another masterpiece one vault at a time.

THE COACH'S BEST FRIEND



Training Games: Coaching Runners Creatively, by Eric Anderson and Andrew Hibbert. 153 pp. Expanded 3rd edition, 2006. Paperbound. With cartoons by George Anderson. **\$17.50** from **Track & Field News, 2570 W El Camino Real, Suite 220, Mountain View, CA 94040**. Postage/handling per item: add \$2.95 for US delivery, \$17.50 for foreign delivery. Calif. residents add 7 1/4% sales tax (\$1.26 per copy). Visa/MC/AMEX orders welcome; call 650/948-8188 M-F 9-5 PT. Or order online at www.trackandfieldnews.com.

Dozens Of Diversions To Keep Your Team Motivated.

INTERVIEW WITH TIM ST. LAWRENCE

JANUARY 2015 **THE RINGMASTER**

Editor Russ Ebbets describes Tim St. Lawrence's Flying Circus set-up and its origins in his editorial in this issue. Here he questions Coach St. Lawrence on his coaching emphases, techniques and philosophies.

BY RUSS EBBETS

1. Let's get this out of the way first—how safe is the pole vault?

We at Flying Circus Pole Vault Academy feel that the "State of the Pole Vault" event is reaching new heights in regard to safety equipment and safety instruction. We now employ bigger pits... safety vault box collars... safer offset standards... and safer vaulting poles. The Pole Rating Weight restrictions are also a huge improvement in our event. Perhaps the best improvements in safety is the pole vault coaches' education emphasis. The sharing of technical theory . . . drills and knowledge by pole vault coaches is unprecedented.

2. What is your background in the sport as an athlete and a coach? What do you consider your greatest successes in each area?

My background as an athlete starts in track & field at Suffern (NY) High School as freshman in 1963...competing for my dad...the legendary Joe St.Lawrence and



with my three brothers, Joe, Chris and George St.Lawrence. After setting the NY state pole vault HS record of 14' 5.25" in 1966 off the wrong takeoff foot, I signed for a scholarship at University of Alabama and competed there for four years with a school record of 16' 5.5". I completed my degree in Physical

Education in 1971 and competed for the Alabama Track Club in 1972. Qualified for 1972 Olympic Trials with a PR 17' 1.5" at the Alabama Relays Open PV. I competed for the NYAC for most of my career, winning 19 consecutive Metropolitan AAU PV championships for the Winged Foot! Competed overseas in Ireland, Scotland, Israel and Canada. Represented USA at Hapoel Games, placing second.

My greatest joy came from my coaching XC, indoor and outdoor track & field at Warwick Valley Central, NY, schools starting in 1974. I taught Middle School Physical Education for my entire 32 years at Warwick Valley and started with three guys on the '74 XC team, then built it up from the MS level to have 85 guys on our fourth state championship team of 2007. We won 25

section team titles in boys XC with a 156 dual meet win streak when I retired in 2008. Then I started up girls XC, indoor track a few years later. The boys outdoor track also had large teams...185 was the largest. Complete team concept... all events emphasized. 28 Section team titles, one state championship team (1997). Greatest success was building "the TEAM CONCEPT" in all our three programs.

3. What did football coach Bear Bryant know about the pole vault before you arrived at Alabama? Is it true you tried to get Joe Namath to throw the javelin?

Coach Paul "Bear" Bryant at Alabama was a huge influence for me during my five years on campus. His positive leadership in coaching young men always inspired me. After an Alabama football loss he would always take the credit for not coaching the boys well that day... and when they would win he would throw all the credit to his players. He was a humble GIANT... and we were blessed to be around him. He would watch us pole vault from his football tower during football practice at Thomas Field. Joe Namath had graduated from Bama before I arrived. . . so no javelin input.

4. Did you ever meet Richmond Flowers? And if so what did you talk about?

I met Richmond Flowers and was taken aback by his athletic achievements both for his All-American hurdler/sprinter status and his national record and by his football skills. Coach Bryant lost him to University of Tennessee for football, so Coach Bryant decided to build up the Alabama track & field team. As AD he did this immediately, so as to never lose another in-state guy who was a dual sport guy.. I benefitted from Richmond going

to UT with my full scholarship the next year...Long Live Richmond !!!! [Editor's note: Richmond Flowers, Sr. was an Alabama state senator and state Attorney General. For his son, a nationally ranked two-sport athlete to choose an out-of-state rival school was a decision some people still haven't forgiven.]

5. Talk about NYAC Coach Jim Rafferty.

I was blessed to be a part of the NYAC track & field experience. The club and Coach Jim Rafferty also put emphasis on the TEAM FIRST. Coach Rafferty was a special coach—very encouraging and believing in each one of us. He would place me in every event that he thought I could score a point. He also got me into high level competition, even if I was borderline (Millrose, Philly, Boston, Penn Relays, Olympic Festival, USA Nationals). I learned a great deal from him on how to handle people.

6. What is "The Barn" and how does it all work?

The Barn is a unique pole vault developmental center in little old Warwick, NY. We opened in 2007. The club is called "The Flying Circus Pole Vault Academy." It is a 100-year-old dairy barn and we converted the second floor hayloft into a pole vault only club. We have two PV pits inside, two PV pits outside in the barnyard. High bars, rings, trapeze, swing machines, 250 vaulting poles, slow motion replay video equipment and full-time rhythmic music blaring. We have beginner, intermediate, elite, and masters classes, with 97 high school students. We are a year-round club and have summer camps; we just opened a club at the New Balance Track Center Armory for the winter,

thanks to Armory President Dr. Norb Sander and Will Nesbitt. We teach safety first for pole vault development.

7. You have done many innovative things such as having vault competitions on the Jersey Shore, vaulting in a shopping mall—how were they received?

We are always trying to improve the visibility of our great event. We attend many out of the venue pole vault gatherings, as the pole vault community is a special breed of athletes, parents, coaches and spectators. The man behind this spotlighting of pole vaulting would have to be Mr. Steve Chappell at UCS Spirit Vaulting Poles, with his 24th Pole Vault Summit in Reno, Nevada just completed last week. Pole vault is stronger than ever and reaching higher.

8. What do you feel have been the greatest accomplishments of The Barn? The most lasting contribution to the sport?

One of our accomplishments at Flying Circus has been an incredible sense of helping young people grow in our event and in character development. We stress Team, Responsibility, Sportsmanship, Spirit and Fun. This is what drives the Flying Circus.

9. What is your feeling on vaulting helmets?

We are neutral on the pole vault helmets question until more testing and equipment is developed.

10. The pole vault and high jump are the only two events in track & field where one cannot set a world record on any given attempt. How do you feel that affects the psychological preparation or mindset of a vaulter?

The pole vault is an event that needs a progressive approach before an athlete can try for the ultimate world record jump. The athlete must gain momentum with each clearance before he gets to the real poles necessary for a world record jump. We take a one jump at a time philosophy.

11. What are some of the things you look for in a novice vaulter?

When we start up our beginners (grades 6-7-8) we look for the speed component first, then athletic balance, then athletic strength. The pole vault is a speed event all the way. We also look for athletes from gymnastics...diving...wrestling... football...volleyball...snowboarding... and cheerleading.

12. Have you ever used testing to identify talent? For example: 30m sprint times, standing long jumps, standing triple jumps, grip strength, etc.

When I was at Warwick Valley Central, we did preseason testing for the first five days of the season so we could group most of the athletes before we start the training. We used the standing long jump, standing triple jump, pull-ups on high bar, side-step test for agility, vertical jump test, 30m rolling start sprint test.

13. Do you routinely test within the season, at season's end and or yearly?

After we tested at the beginning of the season we did not do much testing during the season with the pole vaulters. We did do testing during the season with middle distance and distance groups.

14. With regards to opening height how do you determine that? High enough to conserve

energy but also not so high to produce a "no height." I always figured a vaulter had seven good vaults before they started to tire. Is there a rule of thumb you use?

We like to start the competition at a moderate height. This is to break the ice mentally with a mark. All head coaches know what I mean. Then we can pass a few heights if conditions are very good. We also agree that the athlete has only about 7-10 jumps of explosiveness, so we try to manage them for that. We need 100% speed for optimal pole vault results.

15. One thing many coaches and athletes fail to realize is that many elite competitions like the Worlds or Olympics can have an extended day of competition, up to eight hours, making the vault in part an endurance event. How do you "train in" that quality without sacrificing speed and strength? And on the mental side what do you do to avoid the mental fatigue of being "up" for so long?

Yes, some competitions at the world level are long and conserving energy is a mental focus technique. It's called "Flow State" and only the experienced athlete can drop into this zone. Fitness—both mental and physical—must be included in training to be able to stay in the zone of competition. "The body can never go where the mind has never been"... rehearsal is needed.

16. Was Bubka's 21' vault the most amazing vault you've ever witnessed? Who do you like to watch now? Who do you marvel at? [Editor's note: St. Lawrence was in attendance at a practice session at the Atlanta Olympics where Bubka cleared 21' in a practice session.]

Bubka was way ahead of his

time, Coming from early gymnastics, possessing world sprint speed at 100m, strong and agile, he will always be the one to admire in pole vaulting. They took their time with him, did not cut any corners to get him into competition. They had a long-term vision for him. Petrov was smart with him—36 world records!!!

17. You have a number of early season competitions where you'll have a 5-step or 6-step approach competition. What are you trying to accomplish here?

During our preseason (Sept-Oct) at Flying Circus we use a 4-Step, 5-Step and 6-Step controlled competition with our athletes. This small runup takes out the speed factor, so that athletes can focus on technique instead of covering up the mistakes with speed. It is a progressive way to teach vaulting and it's safer. We build confidence in the preseason.

18. Vaulters are generally seen as the best "athletes" in track and field. That being said what traits do you look for in a vaulter?

We think that the pole vaulter should be the very best boy or girl athlete on your track team. This is a very complex event for the average athlete.

19. You do a tremendous job with encouragement and motivation. What are you trying to accomplish here? Why do you feel this is important?

I believe that the main mission for a coach is to encourage and promote CONFIDENCE. Coaches have a giant responsibility in teaching skills and attitudes. Positive coaches get unbelievable results. True coaching can never be effective in a negative approach or a challenging style. The supporting positive coaching style wins over

the threatening, negative, sarcastic coaching style. This is why great positive coaches can beat negative coaches who have better talent. Handle people with care. It creates bonding in athletics.

20. Along the lines of testing, do you have any physical performance benchmarks you like to see in your athletes that help predict performance. I am thinking things like a bench press, chin-up max, standing long jump, etc., that indicate an athlete is ready to be a 14' male or a 12' female?

We do not have any specific charts to predict success. We never give up on anyone. We just keep mastering the small drills until they show up in the main model.

21. Years ago I saw a chart that had a series of physical tests necessary for one to do to be able to vault 13', 14', 15', etc. Do you use any of these physical benchmarks to challenge your athletes to develop greater speed and strength necessary to improve?

There are some charts that we study, but do not place too much emphasis or roadblock the athlete. There are many chart busters in our sport....

22. What are some of your favorite motivational sayings?

"I WILL GET READY... and then my chance will come."

"DEDICATION TRUMPS TALENT"

"PASSION CHANGES EVERYTHING"

23. Who or where do you go to for inspiration? You could mention people or books, websites

or other media.

I am motivated by the young athletes around me. Motivation is a two-way street. The coach first motivates the athlete...then the athlete motivates the coach with his/her work ethic. Then the coach responds, and then you have the relationship moving to the stars !!!!

24. The truth of athletic participation is that very few will ever "top out" in the sport. Nonetheless the values and disciplines successful efforts require morph into numerous life skills that make for better people. What values or traits do you encourage in your athletes? How do you accomplish this?

Athletic participation teaches all of us the value of strong character and ethics. This is true educational athletics. The lessons of responsibility, leadership, competitive spirit, sportsmanship, team loyalty, caring for others and hard work are the themes of sport. We try every day to teach more than just pole vaulting.

25. What do you mean when you talk about "team vaulting?" How does that work?

We try to teach our kids that there is something bigger than just yourself. When you are running or vaulting on your HS team, the name on the front of the jersey is who you represent. We are just a small part of this team/community and it's up to us to support each other in every way. We strive for PR's not medals.

26. What role do parents play in the success of an athlete? How do you manage, and in some cases develop them?

We believe that parents are the main support for their children. Parents know best. We encourage parents to be involved in their chil-

dren's activities. We include parents in everything we do.

27. Akin to the last question, how do you see the child and their passion for this discipline changing the parent?

We see that parents are impressed with their children and their desire to RISE UP to the next level. Here is a classic case of two-way motivation. Parents rise up also.

28. You are still a proponent of stiff pole vaulting to develop certain skills, especially with the novice vaulter. Why is that and what are some of the basic drills you like to have mastered here?

Bubka mastered the stiff pole vault drills for five years before he used a flexible vaulting pole. So he learned to plant and swing first on non-bending poles and then translated it easier and faster to fiberglass. We teach stiff pole first also, then gradually move to slight bend. They keep progressing. It's safer and the best way to learn it.

29. With a novice—what are the first five things you like to see them learn and master?

With a novice the first things to teach are Run Posture, Pole Carry, Pole Shift/Plant Mechanics, Jump at Takeoff, Swing Movements on the Pole.

30. How do you break the vault down into phases? Which phase do you feel is most difficult to master? And does this change as one progresses from novice to elite vaulter?

We believe that the most important phase to start with is the RUN POSTURE phase. The most difficult phase is the takeoff phase. This emphasis stays very important from beginner to elite levels.

31. How many jumps make up a typical practice? Or do you rate practices hard-easy and if so what constitutes the difference? You could differentiate between simple 3-step plants and full approaches.

A practice session consists of 16-18 minute warm-up dynamics, pole vault posture drills, followed by 12-16 minutes of apparatus drills on high bar trapeze, rings, rubber rope, swing machine, then primary short 4-step swing drills, then 30 minutes of medium or long run vaulting. Complete session = 90 minutes (including warm-down, stretching).



The Flying Circus barn interior

32. Who were and are your biggest technical influences in the pole vault?

I was influenced greatly by Jan Johnson at the University of Alabama. He was my roommate and I learned greatly from him. He won bronze at 1972 Olympic games... Bubka is also the real model for all of us.

33. Who was your greatest influence inside the sport? And who was your greatest influence outside the sport?

My greatest influence inside the sport of track & field was my dad and HS coach, Joe St. Lawrence. He taught me the art of coaching others, the joy of movement, and diversity. My greatest influence outside the sport, Paul "Bear" Bryant.

34. Why do you recommend your athletes "think in pictures?"

We ask our kids to "think in pictures" as they study the vault pictures of positions. The mind's eye takes over and transfer occurs. They can connect the dots this way.

35. What makes a good pole vault coach?

A good pole vault coach needs patience. This is an event that requires a coach and athlete to "stay the course" and to never give up. A no-height day can be followed by a personal best day. A good pole vault coach must study the event and work on small pieces of the movement chain link.

36. How much history of the pole vault do you expect your athletes to have? Other than the Internet what is a good source in this area?

It is important that all athletes know some of the history of this event. The very best book was written by Jan Johnson and Russ Versteeg, called *Illustrated History of the Pole Vault*.

37. You seem to be a big fan of "European Methods" of teaching the pole vault. They are said to "isolate movements" very well. Can you explain what that means and give an example(s)?

We are a big fan of the so-called "European method" of teaching the pole vault. They break the vault

down to very small movements and refine them before moving on. They then combine the small links to form a strong chain of movement skills depending on each link. This is a very impressive way to teach this complex event. They take their time to develop their pole vault athletes. Safer and stronger technique.

38. For the novice vaulter—what are the three most common mistakes you see over and over again? Probably more importantly, what can a coach do initially to avoid or prevent the error from happening in the first place?

The novice pole vaulter needs to spend time with developing a tall upright clawing run so that there is complete balance on the approach. The pole drop and shift-to-plant stage would be the next phase of importance... and the third most important is the tall and stretched plant phase.

39. What are some things a coach can do, what are some things a coach can say to build confidence in a vaulter?

Coaches can make the difference in regard to confidence of the pole vaulter. Constant reinforcement of positive positions, teaching mastery of small drills, repetition of successful movements, excited response to improvements. Passion and communication wins.

40. The dynamic warm-up has been generally accepted in track and field. Do you encourage anything specific your vaulters do to get ready? That being said what do you recommend a vaulter do to stay ready when involved in an extended 4-6 or 8-hour competition mentioned earlier?

We teach dynamic warm-up and we also teach physiological warm-up techniques. Both are very important in getting and keeping athlete ready in a long competition.

41. The basis of good technique is underlying physical strength. What are some conditioning drills you like to see a novice master in their early development?

We have many of our vaulters in speed and strength centers in addition to their HS sprint/lifting training. All dynamic power drills, quick power stimulation.

42. The pole vault is a unique event in track & field for many reasons. One quality that needs to be developed is the dynamic stability at three joint complexes as one approaches the box for the plant—the foot, the lower core and the shoulder girdle. Are there special exercises you do to tone and stabilize these areas? (i.e. multi-link movements, gymnastics, med balls, etc.)

We agree that dynamic stability is the answer to the approach run... and we spend a great deal of every

practice on this concept. A balanced athlete is a powerful machine. Everything must be lined up...bones...muscles...levers. Stabilization work over small banana hurdles, medicine balls, core gymnastic drills. Everything hinges on stability.

43. The day I interviewed Rick Suhr he had two of the top HS girl vaulters vaulting close to the national HS record that afternoon in practice. One thing I marveled at was how he had them changing poles almost every vault. One thing I noticed was the vaulter's ability to effectively adjust his/her plant and off-ground technique to the "feel" of the pole while in flight. I'd contrast this with the kid from a program that has one pole and they plateau at 11' or 12' feet and never get any better because they develop one "feel" and never learn anything different. Am I off the mark with this thought?

If you have watched Coach Rick Suhr in action, you have seen a MASTER POLE VAULT COACH—I believe one of the best in the world today. He has the ability to adjust the athlete at every moment. The HS pole vaulter needs 6-8 poles in his bag for pole vault, small run poles, medium run poles, competitive long run poles. Various conditions change this event dramatically.

44. I imagine during the season you use all types of conditioning and strengthening exercises such as circuit training, weights, med balls, gymnastic-type exercises. Could you comment on your feelings of each and give an example or two of some of the routines you feel are most productive. If you have any pictures you'd like to attach that would be great.

During the season we have many conditioning exercises, especially gymnastics on high bar, ropes, trapeze. We have all of them on video on our web site www.hvflyingcircus.com.

45. With regards to the previous question—how do you introduce these exercises in practice? I am envisioning a dynamic warm-up followed by technical work and vaulting and a practice closed out with conditioning or do you use a different pattern?

The pattern we use at Flying Circus is 16-18 minute warm-up dynamics on runway, including slide box drills, then 8-12 minutes on gymnastic equipment (high bar-rubber rope—swing machine—trapeze.) Then short run drills 8-10 minutes. Then 30-40 minutes of long run vaulting.

46. While history may show Tim St. Lawrence was a great coach and tireless promoter of the pole vault the reality is that you also had cross country and track programs that were always at the tops in New York State. The Warwick Wildcats did not rebuild, they re-loaded. When you look back over all the years what are you most thankful for?

My last 40 Years at Warwick Valley HS/Flying Circus have been beyond my imagination. I dreamed of becoming a solid teacher in the classroom and out in athletics at the end of each day, and my dream came true. The absolute joy of watching kids grow and enjoy their days in sport has been rewarding enough. I coached many great kids who believed in the Concept of Team. This is my proudest contribution.

WHAT'S LUCK GOT TO DO WITH IT?

SUPERSTITIOUS BEHAVIORS IN SPORTS

Superstition is foolish, childish, primitive and irrational—but how much does it cost you to knock on wood? (Judith Viorst, American author)

BY ROBERT B. WELCH, PHD

INTRODUCTION

Leo Manzano, one of America's premier distance runners, sometimes performs a convoluted ritual just before the gun goes off. In it, he licks his index finger and then uses it to touch, in order, his forehead, inside of each elbow, Adam's apple, chest, knees, and ankles, and finally crosses himself. You can see this for yourself on YouTube (<https://www.youtube.com/watch?v=sAgBIGF-Dfo>). What compels him to do this? It seems apparent that he is trying to bring himself good luck and/or ward off bad luck. In short, he is engaging in *superstitious behavior*, the subject of this paper.

What follows is a review of the current knowledge about superstitious

behaviors, with a special emphasis on those in sports. Fortunately, there is no reason to believe that sports superstitions differ in any significant way from those found elsewhere. Topics that will be addressed include:

- The definition and major categories of superstitious behavior
- The kinds of people most likely to be superstitious
- The athletic skills and sports for which superstitions are especially common
- How and why athletes acquire superstitious behaviors
- Under what circumstances they are most likely to put them to use
- Why superstitious behaviors are so difficult to give up

- Do superstitions work? (*The answer may surprise you!*). And finally,
- Take-away messages for track & field coaches and their athletes

Superstitious behaviors have been defined in a variety of ways, some of them very unflattering. The one we will use is:

An action taken for the implicit or explicit purpose of controlling luck.

This definition contrasts with those that stress the supposed irrationality and ignorance of such behaviors, often lumping them together with supernatural beliefs in zombies, astrology, witchcraft, and the like. Instead it focuses entirely on courting luck, which for our purposes refers

to the random and uncontrollable events that are an integral part of life. Nor does this definition assume, as many writers have, that those who behave superstitiously are uneducated, stupid, or emotionally disturbed. Far from denigrating them, our basic premise here is that they consist of ordinary people trying to achieve understandable goals.

SOME ATHLETES AVOID TALKING ABOUT THEIR SUPERSTITIONS FOR FEAR OF RENDERING THEM USELESS.

For athletes, then, behaving superstitiously means trying to coax luck to favor them over their opponents. But if, as one would hope, they have done everything possible to prepare for the upcoming contest, why must they worry about luck? The answer is simply that *it is impossible to anticipate everything*. Regardless of athletes' skills, knowledge, preparation, and even superiority over their adversaries, a myriad of unpredictable things can and do happen that can lead to failure. It is in the face of this stress-inducing uncertainty that superstitious behaviors come to the rescue by restoring athletes' sense of control over their impending fate.

Especially superstitious groups include sailors, actors, gamblers, miners, financial advisors, and college students (Vyse, 1997). But perhaps the most superstitious people of all are athletes. Superstitious behaviors are rampant in sports (for an extensive review, see Neil, 1982). For example, a study of professional athletes across a wide range of sports found that 80% engaged in at least one pre-game superstitious ritual, with an average of 2.6 per

athlete (Schippers & Van Lange, 2006). In another study (Ciborowski, 1997), college baseball players were found much more likely than non-athletes to describe themselves as superstitious and to regularly wear "lucky" charms.

Actually, studies have shown that superstitious behaviors, both in and outside of sports, are more common than surveys and self-reports typically indicate (e.g., Vyse, 1997). This is not surprising given the skepticism and even disdain with which such an admission is often met. As, Vyse (1997, p. 19) says, "It's easier to be superstitious than to admit it." Additionally, some athletes avoid talking about their superstitions for fear of rendering them useless (Neil, 1982). In other words, they worry that they might jinx them!

Of course, sports fans are also superstitious. Examples are watching the game while sitting in the same seat and wearing a "lucky" article of clothing. Such superstitious behaviors, especially when viewing the game on TV, give them a sense of control over a sporting event that, in reality, they are completely helpless to influence.

Most athletes (and people in general) have a "love-hate" relationship with their superstitions. On the one hand, they tend to be steadfastly loyal to them. On the other, they often express serious doubts that they actually work. For example, in the study by Ciborowski (1997), baseball players who engaged in self-acknowledged superstitious behaviors during games typically denied any causal relation between them and their performance. The same was found in a study comparing American and Japanese professional baseball players (Burger &

Lynn, 2005). When asked why they kept doing them anyway, typical responses were to the effect that "It can't hurt," "You never can tell," and "What have I got to lose?"

TYPES OF SUPERSTITIOUS BEHAVIOR

There are three categories of superstitious behaviors: Fetishes, taboos, and rituals.

1. Fetishes

Fetishes are objects worn or kept near with the aim of influencing luck. Traditional examples are four-leafed clovers and rabbits' feet. However, almost anything from an article of clothing to a locket will do. The supernatural belief that the properties of an object can be transmitted to a person by mere contact or proximity is called *magical contagion*. An example from sports is the common belief that using equipment endorsed by a well-known athlete will improve performance. There is also negative magical contagion. For example, most people will refuse to wear a shirt they have been told belonged to the mass murderer Jeffrey Dahmer, despite a monetary incentive and the certain knowledge that it has been washed and sterilized (e.g., Rozin et al., 1986).

For track & field athletes, the use of fetishes is the most popular of the three types of superstitious behavior. Common examples are:

- "Lucky" items of clothing, such as a particular shirt, pair of socks, or headband
- "Good luck" charms worn around the neck or wrist, and
- Special shoe markings

An anecdote that might make a persuasive case for good luck fetishes

comes from the 1948 London Olympics. According to this oft-told tale, American shot putter Parry O'Brien, fresh from winning the gold medal, lent the sweatshirt he wore during the competition to discus thrower Sim Iness, who also won the gold medal. He promptly passed it on to javelin-thrower Cy Young, who (you guessed it) took gold as well.

Objects commonly worn by track & field athletes with the goal of improving their performance are the "power bracelet," "energy patch," and titanium necklace. Despite their popularity, however, none of these athletic accessories has been shown to aid performance, aside from possible "placebo effects" (e.g., Fiddler et al., 2011). This ineffectiveness has led some critics to dismiss them as "merely" superstitious fetishes. However, according to our definition, this is true only if they are being worn to influence luck, not simply because their utility hasn't been proven. If, for example, a track & field athlete wears a "power bracelet" during track meets as a good luck charm, it qualifies as a superstitious behavior. If instead it is worn based on an erroneous belief that it benefits performance, it does not.

Another trendy athletic accessory is the *nasal strip*, first popularized by Jerry Rice and sometimes worn by distance runner Galen Rupp. It will perhaps come as a surprise that although nasal strips may reduce snoring, controlled research has failed to demonstrate any effects on athletic performance (e.g., Clapp & Bishop, 1996). Once again, however, whether there is evidence for the usefulness of an athletic accessory is beside the point. If nasal strips are worn because they are thought to work as advertised, this

does not represent a superstitious behavior, merely an honest mistake.

2. Taboos

Taboos are behaviors or objects considered unlucky and thus to be avoided. They may represent either an individual or a team phenomenon. An example of the former is when an athlete has come to believe that eating cereal on competition day brings about bad luck. An instance of a team-wide taboo is the common prohibition among baseball players against stepping on the white foul line when entering or leaving the field. Although track & field is home to many superstitious behaviors, taboos, at least of the universal kind, do not seem to be one of them.

3. Rituals

Superstitious rituals are rigidly organized patterns of behavior aimed at controlling luck. As with taboos, some are highly personal, such as that used by track star Leo Manzano described earlier. Others involve an entire team, as for example when each member of a baseball team bumps fists with the athletic trainer for good luck just before a game. Some rituals are performed hours or even days before a competition. For example, on the night before a big game an athlete may follow a fixed routine of eating certain foods and going to sleep at a particular time.

It is important not to confuse pre-competition rituals with pre-competition *routines*, such as warming up and stretching. These are done for well-known physical reasons, not to bring about good luck. It should also be noted that some rituals that appear to be superstitious might have a completely different rationale. For example, athletes may claim that they per-

form a rigid routine on the day of a competition not to influence luck but to relax themselves and keep their minds off of the upcoming contest. Who are we to suggest otherwise? Nevertheless, for our purposes, we will assume that the following rituals are used for superstitious reasons while acknowledging that the athlete in question might make a convincing case to the contrary.

A common superstitious ritual among track & field athletes is dressing for a meet in exactly the same order, for instance, always putting the right shoe on first. Less conventional is the pre-meet ritual of University of Oregon's Devon Allen, winner of the NCAA and USATF 110-meter hurdles in 2014. He revealed in a radio interview at the NCAA meet that he always takes a shower just before coming to the track, even if he took one earlier that day (Radio KLCC, 6/12/2014). The superstitious rituals most apparent at a track meet are the ones performed just before the athlete's event. Sprinters and hurdlers are especially noted for them. They include slapping the face, beating the chest, and jumping high in the air. Among field eventers, the jumpers appear to engage in an inordinate amount of this behavior. High jumpers, for example, are well known for their pre-performance contortions, although some of these may simply reveal mental rehearsal of the upcoming jump. More clear-cut examples include:

- A college pole vaulter bends his pole against the ground just before starting his run. He claims that this kind of behavior is common among his fellow pole vaulters (feature story on the website of Hood College, Maryland).
- Yelena Isinbayeva, women's



JIRO MOCHIZUKI/IMAGE OF SPORT

Pole Vault world record holder Yelena Isinbayeva is well known for repeating a lengthy mantra before each vault.

outdoor world record holder in the pole vault, mouths a mantra just before her run-up. What it consists of she is not saying.

- 2012 Olympics long jump champ Greg Rutherford precedes each jump by waggling the fingers of his right hand and swinging his tongue from side-to-side.

Many throwers perform a superstitious ritual that is unique in track & field in that it occurs immediately *after* their effort. Shot putters, hammer throwers, discus throwers, and javelin throwers frequently scream and perform “body English” after launching their implement, in an

apparent attempt to make it go farther. The laws of physics being what they are, they never succeed.

A final sub-category of pre-performance sports rituals is the seemingly irrelevant behaviors that commonly precede the so-called “closed skills.” These are athletic tasks for which the environment is predictable and the performer’s response has been prepared in advance. Examples include a golfer wagging the club just before hitting the ball, a baseball player tagging the plate several times before swinging, and a basketball player bouncing the ball a fixed number

of times before taking a free throw. By the definition above, all of the field events in track & field qualify as “closed skills.” And they too are often accompanied by idiosyncratic pre-performance rituals. Examples are a shot putter bouncing from foot to foot two times before beginning his move across the ring and a discus thrower heralding his effort by throwing the implement into the air with one hand and catching it in the other.

Although these pre-performance rituals are often viewed as superstitious, there is reason to believe this to be only partly true. This is because they are often performed during practice, when there is obviously no need to court luck. It appears that rather than being purely superstitious behaviors they have become an integral part of the skill itself. Indeed, when athletes in *non-competitive* conditions are deprived of these rituals, their performance invariably suffers (e.g., Lobmeyer & Wasserman, 1986). Although these behaviors appear to increase in frequency during competition (e.g., Ciborowski, 1997), the best explanation for this fact appears to be that they facilitate concentration, relaxation, and focus of attention. Another possibility is that they keep athletes from thinking too much about the fine details of the task at hand, a mistake commonly associated with “choking” under pressure (e.g., Welch, 2013).

WHICH ATHLETES ARE PARTICULARLY LIKELY TO BE SUPERSTITIOUS?

Athletes may be divided roughly into three groups regarding their relationship to superstitious behavior. First are the strong believers in superstition who invoke it regularly prior to

and during athletic competitions and are convinced that it will give them an edge. Second are those who are only moderately superstitious but nevertheless behave superstitiously in the hope that it will make a difference. These are the ones with the “It can’t hurt and it might help” attitude. Finally, we have the athletes who are not superstitious at all. The individuals in this admittedly small group abstain from all superstitious behaviors in conjunction with their sport. While, like every athlete, they are aware that the outcome of the competition can turn on luck, they simply hope that the breaks of the game will favor them.

So, while athletes are generally a superstitious lot, some are more so than others. Research both in and outside of sports has identified characteristics that can help predict these individual differences.

1. Negative personality traits

One of the unfavorable stereotypes about superstitious people is that they suffer from personality defects or, at the very least, quirks. Early research seemed to support this belief, but was flawed by an overemphasis on superstitions relating to *bad* luck, such as walking under a ladder or breaking a mirror. Wiseman and Watt (2004) confirmed that negative personality traits are correlated primarily with these so-called negative superstitions.

When positive superstitions such as belief in good luck charms are considered, there is little support for the negative personality stereotype. An example is a study by Zebb, and Moore (2003), who looked for a possible relationship between degree of general superstitious belief and undesirable personality characteristics that included chronic anxiety, fears, depression, and

stress. By far the most important predictor of superstitious behavior turned out to be gender: The female participants were more superstitious than the males. Of those personality correlates of superstitious belief that were obtained, most were only weakly predictive. More importantly, their underlying basis appeared to be a perceived deficit in the ability to exert control over one’s life. This makes sense since, as noted previously, the primary goal of superstitious behavior is to assert (or reassert) power over the unpredictable events for which the normal means of control are futile.

2. Control issues

A substantial body of research confirms that the personality characteristics most closely associated with superstitious behavior concern perceived control (or lack of it) over life events. These traits include (a) locus of control, (b) the need for control, (c) belief in the ability to control luck, and (d) tolerance/intolerance of ambiguity.

a. Locus of control

One of the most well researched personality traits is known as locus of control, as measured by a simple pencil-and-paper test (Rotter, 1966). An example of a test item is: “Most of the time, a person cannot rise above his or her background.” Strong endorsement of this statement reveals a high degree of *external* locus of control, the belief that one’s fate is largely determined by uncontrollable environmental factors. A strong rejection of it is consistent with an *internal* locus of control in which one tends to attribute success to personal qualities such as hard work and skill. Since people

with a strong external locus of control attribute their successes largely to good luck or fate, it is not surprising that they tend to be particularly superstitious (e.g., Peterson, 1978). This includes athletes, as seen in the study by Schippers and Lange (2006) cited previously. They found that elite soccer, hockey, and volleyball players with an external locus of control were more superstitious than those with an internal locus. There are also cultural differences in locus of control that predict differences in superstitious behavior in athletes. For instance, Japanese baseball players tend to attribute poor performance to internal factors such as lack of effort, while American baseball players are more likely to look for an external cause such as bad luck. From this difference one should expect the American ballplayers to be more superstitious than the Japanese. A recent study by Burger and Lynn (2005) found just that result. Finally, Todd and Brown (2003) showed that an external locus of control was predictive of superstitious behavior for track & field athletes at the Division III level although, surprisingly, not for those at the Division I level.

b. The need to feel in control

A related personality trait that predicts superstitious behavior is the need to feel in strong control of one’s life. For some, it is very important; for others, not as much. Thus, people who become especially stressed by events that seem beyond their control are likely to be more superstitious than those who are happy to “go with

the flow.” For example, a study by Keinan (2002) showed that, when under stress, people with a high need for control knocked on wood for good luck more than did those whose need for control was relatively low.

c. Belief in the ability to control luck

Not surprisingly, people who believe that they are capable of controlling luck are more superstitious than those who do not. For example, a study by Van Raalte et al. (1991) showed that the stronger a participant's belief in the ability to control a chance outcome (sinking a putt on an indoor putting green), the more likely he or she was to use a “lucky” ball after making a successful putt.

d. Tolerance for ambiguity

A final personality trait that relates personal control to superstitious behavior is degree of tolerance for ambiguity. Those who are relatively intolerant of it tend to see the world in terms of black and white. For example, they find it hard to believe that someone can possess both good and bad traits simultaneously. Studies have shown that a low tolerance for ambiguity is correlated with a tendency to engage in superstitious behaviors (Keinan, 1994), presumably as a way of reducing the unpleasant ambiguity of an uncertain future.

3. Gender, age, education, and intelligence

a. Gender

Numerous studies of both athletes and non-athletes show that women are on average more superstitious than men

(e.g., Neil, 1982; Vyse, 1997). (One need only think of how unlikely it is to find an astrology column in a men's magazine). The sexes also differ on some of the *kinds* of superstitious behaviors they perform. For example, female athletes in gymnastics, figure skating, swimming, and track & field are famously known for bringing “good luck” stuffed animals to competitions. With a few major exceptions, such as American long-jumper Randy Williams (see photo), male athletes don't do this. It has also been noted that female athletes are more likely than their male counterparts to include clothing and appearance in their superstitious behaviors (Buhrmann & Zaugg (1981).

Exactly why superstitious behaviors are more common in women than in men is uncertain. However, one possibility is the well-established fact that women lean more toward an external locus of control than do men (e.g., Randall & Desrosiers, 1980). As discussed previously, believing that one's fate is at the mercy of external factors is a strong motivation to adopt and invoke superstitious behaviors.

b. Age, education, and intelligence

According to Vyse (1997), there is no clear relationship between age and superstitious belief. Nor, contrary to the common stereotype, is there any connection with intelligence. Bright and not-as-bright people are just as likely to be superstitious. Finally, although the results are mixed, there seems to be a weak, positive correlation between level of formal

education and skepticism about superstitious belief. That is, the more educated the person the more likely he or she is to doubt the validity of superstitions.

4. Type of sport

Athletes in team sports such as baseball, basketball, football, and hockey typically subscribe to more superstitions than do those in individual sports such as swimming and track & field (e.g., Gregory & Petrie, 1975). One reason for this is that a team culture keeps superstitions alive by passing them down from veterans to newcomers. A second and more telling explanation lies in the fact that athletes in team sports are confronted with more uncertainty and less personal control during a competition than is typically found in individual athletic pursuits. As we have noted and will consider further, these are the conditions in which superstitious behaviors flourish. Basketball and baseball players, for example, cannot predict with great certainty how well their teammates will play or what mistakes they might make, and can do little about it. Track & field athletes, in contrast, usually need be concerned only with their own performance and are thus spared this form of uncertainty and lack of control.

While the personal superstitious rituals of athletes in individual sports can be elaborate, they pale in comparison to some of those found in team sports. Take MLB Hall-of-Famer Wayne Boggs, for example. One of the greatest hitters of all time, Boggs ate chicken before each game, took batting practice at exactly 5:17 PM and ran sprints at exactly 7:17 PM. As a final touch, he would draw the Hebrew word “Chai” (“life”) in the dirt just before stepping up to the plate (despite



1972 Olympic gold medalist in the long jump Randy Williams. The teddy bear accompanied him every step of the way.

the fact that he wasn't Jewish!). Ice hockey is also famous for its superstitious rituals. The legendary Phil Esposito had a whole slew of them. Among other things, he dressed for a game in exactly the same order—"lucky" black turtle-neck sweater, underwear, pants, skates, and finally laces. He would then arrange his equipment so that his black tape was on the bottom, white tape on the top, and his gloves resting with palms up on each side of the hockey stick. Finally, during the playing of the national anthem

he would say a Hail Mary and recite the Lord's Prayer.

5. Team positions and athletic skills

Certain team positions and athletic skills are particularly prone to superstitious behavior. For example, former professional baseball player George Gmelch (1992) has noted that baseball pitchers tend to be more superstitious than outfielders. This, he argues, is because of the greater role that chance plays in pitching than in fielding. A pitcher is

well aware of how much his success depends on the performance of the opposing hitter, the umpire, and the defensive play of his teammates. He knows, for example, that even with superb pitching, he has no possibility of a shut-out (let alone a no-hitter) without great plays at the bases and in the outfield. Outfielders, in contrast, are much less dependent on the actions of their teammates and more confident of success. Indeed, according to the latest MLB stats, their chance of making an official error is only 1 in 100. On the other hand, when these same players are at bat, a situation fraught with uncertainty and with an average failure rate of over 70%, they engage in a wide variety of superstitious behaviors. The same explanation has been given for the greater amount of superstition that appears to occur with divers as compared to swimmers, presumably because of the greater number of things that can go wrong (such as an injury) during a dive (Samuelsen, 1957; cited by Neil, 1982, p. 116). Still another potential example is the larger number of superstitions involving hockey goaltenders compared to those in the other, relatively less dangerous positions (e.g., Gregory & Petrie, 1975).

From these observations an interesting prediction about track & field emerges. Namely, that *those events with the most uncertain outcomes will be associated with the most superstitious behavior*. For example, the number of things that can go awry in the sprints, short hurdle races, and the 4 x 1 relay is much greater than in the long-distance races, and with much less time for correction. It follows from this difference in uncertainty that performers in the former are likely to be more

superstitious than those in the latter (Leo Manzano notwithstanding). Although casual observation seems to bear out this prediction, it would be interesting to confirm that it actually holds.

6. Skill level

Who do you think is more likely to be superstitious, an elite and highly trained professional athlete or a moderately experienced amateur? You might think that the better the athlete the less the need for superstitious behavior. It turns out, however, that just the opposite is the case (e.g., Neil, 1982). Likewise, the better the team the more superstitious its members tend to be (Buhrmann & Zaugg, 1981). In one example, hockey players who practiced or played six times a week performed nearly twice the number of superstitions per game as players who practiced 1-2 times a week and played in a lesser league (Neil et al., 1981; cited in Neil, 1982, p. 118).

On reconsideration, perhaps these observations aren't so surprising. Elite athletes, most of whom are or at least aspire to be professionals, have a lot riding on their performance. For many, being an athlete is their consuming passion, personal identity and even livelihood. Further, they are often pitted against other elite opponents, making the perceived importance of luck particularly great. In short, it is the athlete who has the most to lose and is regularly placed in situations where chance can quickly turn success into failure who is particularly prone to court Lady Luck. As noted later, this lesson can be readily applied to the sport of track & field.

ACQUIRING SUPERSTITIOUS BEHAVIORS

One of the most intriguing questions about superstitions is how one acquires them in the first place. There are two very different ways that this happens. The first and simplest is by picking them up from one's culture. For example, early in life most of us heard that four-leafed clovers are lucky, while breaking a mirror is unlucky. An example of such cultural transmission in an athletic context is when new members of a team are taught the superstitions unique to their sport. For instance, rookie baseball players are cautioned to avoid mentioning an ongoing no-hitter for fear of jinxing it. Of course, knowing about a traditional superstition doesn't necessarily mean believing and practicing it.

The second and much more interesting way people come by superstitions is through personal experience. The mechanism for this has been extensively investigated, with direct applications to athletic performance. This research has shown that superstitious behaviors are born out of a chance association between a noteworthy (good or bad) performance and events or actions that occurred at or near the same time (Vyse, 1997). For example, a high jumper who sets a personal best may in future competitions wear the same socks he had on during his record-breaking performance.

In the case of superstitious rituals, athletes who have done unusually well in a competition may ask themselves what they did earlier in the day that might explain such a good performance. They may note, for example, that they ate a particular food at breakfast or donned their

clothes in a specific order, and thereafter repeat these actions to try to recreate their good fortune. Alternatively, an athlete who has had an especially poor outing may avoid certain events or activities that occurred earlier that day and have thus become taboo.

Why are athletes so quick to draw a causal relation between their performance and prior events that, objectively speaking, seem to have nothing to do with it? The answer is that they, like most people, fall victim to certain mental errors. One of these is to greatly underestimate how many times something must occur before it should no longer be considered a mere matter of chance. For example, it may take a basketball player only two or three times of eating eggs for breakfast and later doing well on the court to conclude that this can't have been an accident. This human tendency is one of the main reasons many basketball fans and players believe in the "hot hand," in which a string of, say, five field goals in a row is reflexively (and often wrongly) seen as evidence that the player is "in the zone."

It has been shown that this error of perceiving meaningful patterns in what is actually a series of random events is intensified when one's sense of control is threatened (e.g., Whitson & Galinsky, 2008). The second error of thinking is assuming that because two events have occurred closely in time, the first has *caused* the second. Thus, based on the well-known error of confusing correlation with causation, our hypothetical basketball player comes to think that eating eggs in the morning will cause him to perform better in the game that evening.

THE MOTIVATIONS FOR ACQUIRING AND ENGAGING IN SUPERSTITIOUS BEHAVIORS

The acquisition and use of superstitious behaviors serve one of the most basic of all human needs: To gain (or regain) control over one's life, especially with the stakes high and the outcome uncertain. An everyday example of the relationship between personal control and superstitious behavior is seen in the difference between cars and airplanes. Most people know that it is much safer to fly than to drive. Nevertheless, they often feel less in control, and thus more vulnerable, when in an airplane seat than in the driver's seat. And, sure enough, there are many more superstitions connected with air travel. It has been estimated that over 50% of airline passengers engage in at least one superstitious behavior prior to boarding. A common one is giving the fuselage a "love tap" before entering. Airlines cater to these concerns by avoiding the number 13 for gates and flights. However, aside from the occasional amulet hanging from the rearview mirror, driving a car is devoid of superstitious behavior. This, despite the demonstrably greater likelihood of being in a fatal accident, regardless of how good a driver you are.

PEOPLE, NOT LEAST OF ALL ATHLETES, ABHOR BEING AT THE MERCY OF CHANCE. THEY LOOK FOR WAYS TO GAIN SOME POWER OVER IT.

So how does this play out in sports? Take, for example, a football player

who has done all the usual things to prepare for the big game—practice, weight training, diet, mental exercises, etc. But despite all this, he knows that the game can hinge on the random and uncontrollable events of which luck—both good and bad—consists. For instance, he can't predict how the opposing team will perform, whether he or one of his teammates will get injured, and whom the officials' calls might favor.

Likewise, a distance runner, no matter how ready for the race, is aware of the possibility of being boxed in or tripped up at a crucial moment. The fortuitous nature of such events makes them impervious to everyday preparation. People, not least of all athletes, abhor being at the mercy of chance. They look for ways to gain some power over it and, as a vital side effect, reduce the helplessness and stress they will otherwise experience. As we have seen, acquiring, and particularly engaging in, a superstitious behavior fills this need. This, together with the natural anxiety to do well and perhaps a fear of failure, is the breeding ground of superstitious behavior. It has been claimed that a potentially unfounded certainty is better than no certainty at all and, as the maxim goes, "What have you got to lose"?

WHEN IS AN ATHLETE MOST LIKELY TO ENGAGE IN SUPERSTITIOUS BEHAVIOR?

We now know how and why athletes acquire superstitions. But exactly when are they most apt to put them to use? There are two situations where the need to control luck by superstitious behavior is especially strong. The first is *when the outcome of an athletic event is*

very important. Here, for obvious reasons, it is crucial to prepare for every contingency, including luck. The second is *when athletes consider themselves closely matched to their opponents*. Here, they rightly reason that when competing against an equally skilled and prepared adversary luck will loom especially large in determining the outcome.

An example where these two factors converge for track & field athletes is the Olympic trials, which are both critical to their career and bring together elite athletes at the top of their game. In contests of lesser importance, such as a college dual meet or when the athlete feels greatly superior to his or her opponent and thus less concerned about being lucky, the need to implement a superstitious behavior is diminished.

WHY DO SUPERSTITIONS PERSIST?

Why is it that most gamblers cling so stubbornly to their superstitious behaviors when it is obvious to most objective observers that they are a waste of time? It is not just gamblers, though. Nearly every superstitious person resists contradictory evidence. The problem is that superstitious behaviors are inevitably followed by success every so often, regardless if they have anything to do with it. And, despite being greatly outnumbered by the failures, it is these successes that keep superstitions alive and well.

There are several reasons why success trumps failure in the maintenance of sports superstitions. First, like most of us, athletes are prone to wishful thinking and selective memory for any scrap of evidence that supports their beliefs, while

ignoring or forgetting disconfirming experiences. This is known as the *confirmation bias*. If asked, athletes (and people in general) tend to overestimate the success rate of their superstitious behaviors and underestimate the failures.

A second reason why athletes seldom question their superstitions to the point of abandoning them is that they never put them to the test. To do this would require comparing, over many instances, the result of engaging in a superstitious behavior to the result of abstaining from it. Since wearing a good luck charm or performing a superstitious ritual just might help, no athlete is likely to do without it in an actual competition just for the sake of science.

The final and perhaps most important explanation for why superstitious behaviors are so enduring is that *they are personally rewarding*, at least for superstitious people. For starters, they reduce the anxiety naturally felt when confronting an important event with an uncertain outcome, such as an athletic contest. More generally, people tend to have a visceral dislike for the possibility that their lives are at the mercy of random events; invoking superstition restores their faith in an orderly universe. But the most rewarding experience of all provided by superstitious behaviors is an exhilarating state of mind known as perceived *self-efficacy*. Simply put, this is a powerful feeling of confidence and expectation that one will do well on the upcoming task. As we shall see in the next section, not only does increased task-specific self-efficacy feel good, it's good for you.

The dogged persistence of superstitious behaviors is, of course, no

guarantee that they serve a useful purpose. In the following section we will examine this key question, especially as it pertains to athletic performance.

DO SUPERSTITIOUS BEHAVIORS IMPROVE PERFORMANCE?

So far, we have learned that superstitions are widespread (especially in sports), endure through thick and thin, and increase one's confidence about an impending performance. This is all well and good, but does it mean that they actually help one to do better? There is good reason to believe that they do, although not by means of a supernatural ability to directly control luck.

This explanation begins with the fact that invoking a superstition causes the aforementioned increase in perceived self-efficacy. This enhanced belief in one's ability has been shown in turn to predict improved performance on a wide range of tasks, including many athletic skills (e.g., Moritz, et al., 2000). The likely reason is that heightened self-efficacy with respect to the approaching task increases not only one's confidence in performing but also willingness to work harder and longer at it (e.g., Bandura, 1997), all of which obviously benefit performance. Thus, it is reasonable to propose that superstitious behaviors will improve performance and that they do so by means of increased self-efficacy. However, to confirm this hypothesis we need hard empirical evidence. Fortunately, just such evidence has been obtained in recent laboratory studies. The conclusion from this research is good news for superstitious people.

Before discussing this work, how-

ever, it is important to distinguish between tasks that require some level of skill and those that do not. Some activities--roulette and the slots, for example--involve no talent whatsoever. For these aptly termed "games of chance," superstitious behaviors are useless, despite what gamblers may claim. Winning or losing is determined completely randomly by the casino. No good luck charm, ritual, or "system" will alter this dismal fact. For other tasks or games, including athletic events, skills in varying degree are necessary for success. And recent evidence shows that for these activities superstitious behaviors do have a beneficial effect, at least for people who are already superstitious.

SUPERSTITIOUS BEHAVIOR FACILITATES PERFORMANCE ON BOTH MOTOR AND COGNITIVE TASKS, WITH CLEAR IMPLICATIONS FOR ATHLETIC COMPETITION.

Lee et al. (2011) performed an experiment in which participants took 10 golf putts on an indoor green at a hole about 7 feet away. Those in one group were told that the putter they would be using had previously belonged to Ben Curtis, winner of the 2003 Open Championship. The other group was not. The first group averaged more successful putts than did the second (53% vs. 39%) and came closer to the hole on shots that missed. Thus, this study confirmed that activating a superstition (via magical contagion) improves athletic performance. An interesting sidelight was that those who believed they were to use the famous putter perceived the hole

to be *bigger* than did those who were to use the ordinary one. This perceptual effect occurred before the participant had even putted.

In the first of a series of experiments conducted in a German laboratory, Damisch et al. (2010) also tested performance on an indoor golf-putting task. Participants, the large majority of whom were moderate-to-strong believers in good and bad luck, were divided into two groups. One used a ball they were led to believe was “lucky” while the other used one that was supposedly “unlucky.” Participants in the positive superstition group made more successful putts (out of 10) than those in the negative superstition group (64% vs. 48%). A second study showed that this difference was due entirely to a positive effect of the “lucky” ball. Participants In a third study did better on a motor-dexterity task when it was preceded by a good luck gesture (the German equivalent of crossing one’s fingers) from the experimenter.

This result was replicated in a follow-up study in which performance on Tetris (a spatial/cognitive task) was measured. Noteworthy for our current hypothesis, the superior performance of the “good luck” group was accompanied by an increase in self-efficacy with respect to the task.

In a final study, participants brought their own “lucky” charms to the laboratory, but only half were actually allowed to keep them nearby while performing an anagram game. This group did better on the task and reported greater self-efficacy for doing it than did the participants who were prevented from making use of their charms. Importantly, increases in self-efficacy were accompanied by greater task persistence, a well-

known contributor to performance.

Finally, research has shown that invoking a superstition or simply being superstitious can negate the debilitating effects of task failure. It is well known in psychology that people who do poorly or fail on a task do worse on a subsequent task than those who have experienced success (e.g., Hiroto & Seligman, 1975). In one common example, participants are confronted with an unsolvable puzzle and then tested on a word problem. A study by Dudley (1999) showed that non-superstitious participants do worse on the word problem than do superstitious participants. The lesson for athletes from this and related research is that the natural discouragement from having lost a sporting event need not cause subsequent poor performance if one has the support of superstitious behavior.

It is clear from the studies described in this section that superstitious behavior facilitates performance on both motor and cognitive tasks, with clear implications for athletic competition. And, as speculated earlier, the go-between for this advantage is an increase in perceived task-specific self-efficacy. Thus, superstitious behaviors become a “self-fulfilling prophecy” in which expectations about the outcome of a behavior cause one to engage in behaviors (such as working harder and setting more specific goals) that produce that very result. They join several other so-called “positive illusions” such as overestimating one’s abilities and underestimating one’s faults and being more optimistic than warranted by objective circumstances. In short, the belief that one is able to directly control luck, though patently false, can nev-

ertheless lead to positive outcomes because of the useful behaviors it produces.

IMPLICATIONS FOR TRACK & FIELD COACHES AND THEIR ATHLETES

What can track & field coaches and their athletes take away from this review of superstitious behavior? Here are the highlights.

- Coaches should assume that most of their athletes engage in superstitious behavior at least some of the time, even if it may not always be apparent.
- They do this to help cope with the stress and uncertainty of knowing that unexpected things can happen during competition that standard preparation can do nothing to prevent.
- For those athletes who believe in superstitions, invoking one prior to competition restores a sense of control, reduces anxiety, and generally reassures them that they have done everything possible to increase their likelihood of success.
- Superstitious behaviors can also counteract the negative effects that a poor athletic showing is otherwise likely to have on subsequent performance.
- The benefits of superstitious behaviors will be felt most by those athletes who suffer from performance anxiety and aversion to uncertainty and for whom loss of control (real or perceived) represents a particularly serious personal threat.
- Wishing one’s athletes good luck is not just a polite gesture. Evidence indicates that it can actually help them perform better.
- Coaches can expect supersti-

tious behavior to be more pronounced for their elite athletes than for neophytes.

- They should also expect to find it more common in the events that are especially subject to chance events, such as the sprints, short hurdle races, and relays.
- Look for a surge in superstitious behavior by competitors who feel evenly matched to one another and thus aware that success or failure can easily be tipped by luck.
- Coaches should hesitate to discourage, let alone disparage, the use of superstition by their athletes unless they are being relied on to the neglect of traditional training methods. A strong dependence on superstition can backfire if, for example, a lucky charm is lost or misplaced.
- In a similar vein, athletes should be discouraged from rationalizing away a poor performance by blaming it on their failure to perform a favorite superstitious behavior.
- Contrary to common opinion, attempting to control luck by superstitious behavior is not merely a harmless quirk. Rather, studies have shown that *it really can make athletes perform better*.
- The research demonstrating the positive effects of superstition on athletic performance has highlighted the importance of perceived self-efficacy. Coaches should also consider using more direct means of boosting this beneficial belief in their athletes, such as offering timely and appropriate praise and encouragement and even merely wishing them good luck.

SUMMARY AND CONCLUSIONS

We have confirmed the popular perception that superstitious behaviors—the use of fetishes, taboos, and rituals to influence luck—abound in sports. This most assuredly holds for track & field, primarily in the form of fetishes and rituals. Individuals particularly likely to act superstitiously are those who have a strong need for control over their lives while feeling relatively ineffectual in their ability to exert it.

Although superstitious behavior is more common in females than males, it has little or no relationship to age, education, or intelligence. Nor is there any support for the popular stereotype of superstitious people having negative personality traits such as depression. In sports, it is the elite athlete over the novice and team over individual sports where superstitious behaviors are especially common.

Superstition is conspicuous for those athletic skills where chance plays an especially large role. Examples are pitching versus fielding in baseball and, it is predicted, those track & field events for which many things can quickly go wrong.

We have also discussed how athletes acquire superstitious behaviors, when they are most likely to use them, and why they often cling to them so tightly. All sports, no matter how much skill they require, have a significant element of chance. This unpredictability is a major reason why they are so engrossing to fans while at the same time causing the majority of athletes to resort to superstition.

Finally, we have found that superstitious behaviors are far from a useless activity. They have experimentally confirmed beneficial effects for both athletic and other activities, although not for the supernatural reasons often ascribed to them. It behooves track & field coaches to understand why their charges perform superstitious behaviors and to respect them for it. Athletes, in turn, need to be aware that these activities are nothing to be embarrassed about and are certainly not a waste of time. On the contrary, as the evidence shows, *they can work like a charm!*

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COACHING EDUCATION



TRACK & FIELD COACHING ESSENTIALS

USA Track & Field Level 1
Coach Education Manual



NEW RECERTIFICATION GUIDELINES FOR USATF LEVEL 1 COACHES

As of January 1, 2015, the Coaching Education Committee has implemented a recertification component for the Level 1 curriculum. Recertification for Level 1 coaches will now be required on a 4-year cycle.

PURPOSE

To introduce new training techniques, and provide the latest materials to enhance the knowledge of Level 1 coaches. As of January 1, 2015, a new textbook and updated curriculum was introduced into all Level 1 schools.

QUALIFYING PERIOD

Certification will be renewable every four years to match the Olympic cycle. To open the new recertification, a "grandfather clause" will be offered from January 1, 2013 through December 31, 2020. This is a special offer to open the recertification guidelines. A Level 1 coach who fails to recertify through the 2020 Olympic quadrennium as of December 31, 2016 will be removed from the USATF coach certification database.

RECERTIFICATION GUIDELINES

To retain a Level 1 certification that is recognized by various educational organizations, including NCACE, USOC, a coach who received their Level 1 certification prior to January 1, 2013, and has not obtained an USATF Level 2 Certification must meet the new recertification guidelines. There are two options for coaches to renew his/her status as a USATF Certified Coach. [Click here](#) for full explanation of guidelines and how to begin your Recertification.

WHAT THE NEW RECERTIFICATION PROVIDES:

- Second Edition Level 1 textbook (updated content that includes graphics, skill pictures, updates from USATF master coaches)
- Updated school curriculum content, delivered by certified instructors
- USADA modules to provide coaches with best practices for Anti-doping information
- New online exam
- Recertification through December 31, 2020.

START TODAY TO BE AN USATF CERTIFIED COACH!!!!



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2015 COACHING EDUCATION SCHOOLS

MAY-JULY

LEVEL 1

7/17 - 19/15	Nassau Community College — Garden City, NY
6/26 - 28/15	Savannah State University — Savannah, GA
6/19 - 21/15	Mt. Pisgah Christian Church — Johns Creek, GA
5/30 - 31/15	Cerritos College, Norwalk, CA
5/8 - 10/15	Public School 9 — New York, NY
3/20 - 22/15	Villanova University, Villanova, PA

LEVEL 2

7/5 - 11/2015	North Carolina State University — Raleigh, NC	First-time participants
7/7 - 11/2015	North Carolina State University — Raleigh, NC	Level 2 alumni
7/5 - 7/2015	North Carolina State University — Raleigh, NC	Instructor training course

LEVEL 2 N.C. STATE INFORMATION

Detailed information for onsite arrival will be mailed to all registrants 2-4 weeks prior to school start.

Housing Options

North Carolina State is offering housing in four-room suites setting with two beds per room with a private bath for each suite. Room and board package includes full linen package. Linens include pillow, two sheets, pillowcase, light blanket, plus one towel and washcloth. **USATF has secured a set number of rooms and they are available on a first come-first serve basis. Students applying after quota is reached will be placed in other conference housing with same layout, but in a different building.**

Please note that these are college residence halls with twin size, recycled bedding. If you have trouble sleeping, prefer larger bedding or think you will be uncomfortable, we suggest staying off-campus at a local hotel or bring additional linens.

	Tuition, Room & Board		
	Tuition Only	Shared Room Total	Single Room Total
First Timers	\$450.00	\$825.00	\$885.00
Alumni	\$400.00	\$673.00	\$713.00
ITC	\$350.00	\$572.00	\$602.00
ITC/Alumni	\$750.00	\$1,125.00	\$1,185.00

*Payment will not be made until coach is accepted into the course.

Parking

Those needing a parking pass can purchase one through the payment process. Parking will be charged at the following rates:

- Four days, \$21.20
- Six days, \$31.80

Check-In/Out

Check-in will take place between 3:30pm and 5:30pm on Sunday, July 5th. Upon arrival, there will be signage directing coaches on where to park or be dropped off. The Level 2 School and Instructor Training Course (ITC) will start promptly at 6:30pm and all participants must be present at this time.

Alumni dorm check-in is from 2:30pm to 5:30pm on Tuesday, July 7th, with sessions starting that evening.

What's Luck Got To Do With It? Superstitious Behaviors In Sports

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PART 1

USING A 400M CRITICAL ZONE TRAINING MODEL TO IMPROVE WORK CAPACITY FOR THE 100M/200M HIGH SCHOOL SPRINTER

Adapted from Coach Gable's Level 3 research paper. Part 2 follows in Issue #212.

BY JASON GABLE, USATF LEVEL 3 CANDIDATE,
USATF LEVEL 2 CERTIFIED: SPRINTS-HURDLES-RELAYS

ABSTRACT

High school track & field teams have participants coming from a variety of backgrounds: middle school programs where the emphasis was on being a part of a team and general fitness and having fun, some from other sports (i.e. football, basketball, cross country, soccer, etc.) using track as a way to stay in shape, and even for some high school track is the first sport they are participating in. Many also come into the sport expecting to compete in an event where they have little to no knowledge and/or experience in the technical aspects. Many join the 100m or 200m competitive squads assuming they have the speed and

quickness to be highly competitive at these distances, yet have no belief or trust in their bodies that they could handle multiple events or longer competitive distances. Using personal experiences as a high school and collegiate distance runner, while incorporating multiple studies on short and long sprint training and energy system distributions, this writer has devised a program that uses several 400m training models to help improve the work capacity of 100m/200m sprinters. The program has become a hybrid of mid-distance and long-sprinter training models that not only improves 100m/200m times but also allows the coach to test which athletes are more suited for the 400m and/or the 800m.

Evidence provided at the end of the report shows subjective growth over all years of the athlete's high school career, calculated growth improvement percentages between their junior and senior years, and several athletes who have moved up in competitive distance to the 800m either in their senior year or in their post-high school career.

DEFINING WORK CAPACITY AND ITS RELATION TO HIGH SCHOOL SPRINTS

The high school track athlete tends to fall into two categories: distance runners (800m, 1 Mile, 2 Mile) or sprinters (60m indoor, 100m,

200m). The one event that typically falls under the radar is the 400m. The 400m, the “in-between” event, could be classified as an endurance sprint. In this writer’s opinion the two toughest events on the track are the 400m and 800m. Both races require a certain level of aerobic endurance while using select anaerobic qualities to run a competitive race. At the collegiate level you tend to see athletes who have already acquired suitable skills to race effectively at either of these distances. However at the high school level it can be difficult to find quality athletes for the 400m who (1) want to sprint this distance and (2) want to do the training to be competitive at this distance.

**GENERALLY SPEAKING
THE SHORTER SPRINT
DISTANCES WILL USE
MORE ANAEROBIC
ENERGY THAN AEROBIC,
AND THE LONGER
DISTANCE EVENTS WILL
BE MORE AEROBIC
THAN ANAEROBIC.**

When reviewing various training modules used for today’s track & field athletes, it is my opinion that the track events can now be broken into 3 groupings: (1) the short sprints [60m, 100m, 200m], (2) the long distance events [1 Mile, 2 Mile], and (3) the new group long sprint events [400m, 800m]. Both the 400m and 800m use very similar energy systems in their training—roughly 50% anaerobic, 50% aerobic system, similar neuromuscular and metabolic training approaches, as well as very similar race strategies. While my report will not focus on 800m training and racing strategies, I will borrow from mid-distance

training and racing philosophies in my training strategies for improving the short-sprinters work capacity.

Work Capacity (WC) can be defined as an athlete’s physical and neuromuscular ability to handle varying volumes of training and varying intensities. WC is respective for each athlete where the volume and intensities are systematically increased over the course of a season, and then periodically decreased dependent on recovery periods, competition schedule, and taper periods for peak performances. A well-constructed annual/macrocycle program would include a scaffolded increase of first volume, at a constant intensity, then a small decrease in volume but an increase intensity for another 2-3 week mesocycle. This process would repeat throughout the plan until a predetermined top-limit volume is reached. And then volume would decrease while intensity remains high (i.e., tapering) as the athlete moves towards his peak performance of the macrocycle.

An athlete’s inherent ability to handle a certain load (the volume component of WC) is initially based on his/her level of general fitness and the basic level of correct functional movements. At the collegiate level the athlete enters with at least an above-average ability in these two realms from his high school or club experiences. However at the high school level a majority of athletes are joining the team with little sufficient ability in these areas.

The high school athlete, maturing both physically and mentally throughout these years, has the potential to reach higher levels of both volume and intensity not initially

evident to the coach *or* the athlete. According to USATF Level 2 Coaching literature (2010), this “potential” is based on the following biomotor abilities that determine general training and event-specialization: Strength & Power, Speed, Flexibility, Neuromuscular Coordination, and Energy System Development. This paper will touch on all of these abilities, but will tie in research from the last two biomotor abilities listed and their relation to using a specific 400m training model to increase work capacity for short-sprinters.

When planning individual training sequences, traditional training dictates that separate mesocycles should focus on singular energy systems. However recent research has shown contributory links between the aerobic and anaerobic energy systems for all levels of track events. Generally speaking the shorter sprint distances will use more anaerobic energy than aerobic, and the longer distance events will be more aerobic than anaerobic.

Nevertheless there is continual contribution from both energy systems at each level of racing. To be specific, the 400m will be 57% anaerobic and 43% aerobic, and the 800m 66% aerobic and 44% anaerobic (Spencer, Gastin). The change in the 50/50 split appears to come about around the 600m mark of competition.

Obviously as the competition distance increases so will the aerobic energy system contribution. But as the competition distance decreases, the aerobic contribution will decrease while the anaerobic contribution will increase. The 200m becomes 29% aerobic and 71% anaerobic (Spencer). When

moving from the 200m to the 400m competition distance there is a “crossover” between the systems at approximately 40-55 seconds into the trial (Duffield). Therefore when training at the short-sprint events it becomes valuable to incorporate training for both the anaerobic *and* the aerobic energy systems. This will ultimately lead to the athlete being able to handle higher intensity training at higher volumes. In return this incorporation will improve both the anaerobic ability (the body’s phosphocreatine hydrolysis ability) and aerobic metabolism ability (Duffield).

As the training progresses down to the 100m a majority of the energy system used is the anaerobic energy system. Yet there still remains a slight aerobic contribution to the distance which affects the athlete’s ability to hold off fatigue towards the end of the race. This metabolic fatigue at the end of a race is known as Glycogen Depletion (Seagrave). Long Speed Endurance (LSE) interval training helps improve this break in homeostasis as well as training the muscles to rid themselves of lactic acid accumulation.

The progression in which to properly train the athlete would be to start at a low percent intensity early in the season and then systematically increase the load and percent intensity throughout the season, as described previously. Clyde Hart provides a percentage breakdown on intensities when training for the 400m throughout the season. This writer found these percentages also work advantageously for short-sprinters in building their Work Capacity for more intense training at the 100m and 200m distances (Hart).

It is the belief that one can create

a high school sprint program that uses many aspects of training for the 400m to develop strong short-sprinters and also cultivate quality 400m sprinters later in their career. By periodizing the annual training cycles and creating a scaffolded pace system, one can take young short-sprinters and over 2-3 years develop competitive 400m sprinters. As a result the 400m sprinters who display more anaerobic qualities can also compete in the 100m/200m, as well as 400m sprinters who may be more aerobically inclined may move up to the 800m.

The key to this system is following a systemized pace chart according to the **Critical Zone Training Program** (McTaggart). CZ Training takes the 400m race and breaks it into three segments: 40%-40%-20%. The equivalence for the 400m is 160m-160m-80m. The 160m segment can be trained following glycolytic principles (i.e., Special Endurance I). The 80m segment can be trained individually following Short Speed Endurance. And finally taking the first two segments of this race into consideration (80% of the 400m = 320m), one can train the athlete here following Special Endurance II training principles. The focus of this report is on using the 80% segment (320m—Special Endurance II) as a guiding principle in training 100m/200m sprinters to improve their work capacities during their General Preparation and Precompetitive Mesocycles.

WHY FOCUS ON THE 400 METERS TO INCREASE WORK CAPACITY IN THE SHORT-SPRINT EVENTS?

For the short-sprint events, the first 60m primarily uses the glycolytic energy system. The initial output

from the glycolytic energy system carries the athlete for about 10 seconds, and then the anaerobic contribution sets in starting at 80% and decreasing as the distance increases (Spencer). Studies have shown that the optimum distance an individual can carry most of his/her top speed is over 60m. Because of this key workouts for training top-end-speed (i.e., maximum velocity) are intervals up to 60m.

CZ TRAINING TAKES THE 400M RACE AND BREAKS IT INTO THREE SEGMENTS: 40%-40%-20%.

In the 100m typically the winner of this race is the “one who slows down the least” (Chase Clinton, USATF Level 2 Training Speed Clinic, 2010). For the initial 60m of the race, training protocol falls into the realm of Speed Endurance-Alactic training system. And as we progress to the 200m, and ultimately up to the 400m, a greater emphasis is placed on Long Speed and Special Endurances over Short Speed Endurance, all of which can be expressed as percentages of training equal to percentages of race distances (Otte).

To help understand the distribution of these energy systems the trainee need look no further than distance training models. Training for race distances from 800m to 2-mile trains not only the aerobic energy system but also the anaerobic energy system.

As stated previously there are always positives to incorporating aerobic training into a short-sprinters’ program (Winters). While distance

runners will tend to train the aerobic energy system at high intensity levels, short-sprinters will train their aerobic systems at more moderate-to-low levels as part of their pre- and post-workout regimen. Yet both types of runners need to still train their anaerobic energy systems.

Training anaerobically will provide the distance runner with his/her “sprint workouts” in season, and for the short-sprinter this training anaerobically will involve Long Sprint and Special Endurance workouts throughout the entire season (Gastin).

By using training specialized for long-sprinters at the high school level, short-sprinters can better train their bodies to carry high volumes at high intensities later on in their track career. There are many ways to train the anaerobic energy system for long-sprinters. The focus of this report is on Critical Zone training at interval distances of 300m-320m.

Another useful training interval is the 200m. While the athlete should never train at the distance he/she competes at, the 200m distance provides both the athlete and coach with structured interval times to assist in subjective analysis of work capacity, general fitness, and sprint mechanics.

One progression used early in the Winter season by this author is to begin with 6-8x200m at 80% intensity. Over the winter months the athletes will progress up to 14x200m at 80%, and then begin to slowly increase the intensity while decreasing the volume. The advantages of this are two-fold: (1) consistent times for Special Endurance 1, and (2) testing to see which athletes may be able

to be competitive at the long-sprint distance (i.e., 400m).

A “steady” pace is encouraged when training at the 200m distance. As fatigue sets in towards the latter half of the total workout volume, the athlete is encouraged to accelerate over the 200m intervals, when in fact the athlete is just “maintaining their steady speed” (Parker). Time differentials of 1-2 seconds for each 200m interval would indicate that the athlete is ready to move up to compete at the 400m level (Parker).

Training at these distances with specified intensities becomes critical to building work capacity in the short-sprinters, but also can become detrimental if the duration is too long. Paul Gastin’s study of energy systems shows a duration as low as 6 seconds (40-50 meters for the above-average high school sprinter) remaining 95% anaerobic. So no matter the duration of the sprint (where duration can be equivalent to interval distance) there is always some contribution from the aerobic energy system taking place. Where this understanding becomes detrimental is if there is an inconsistent duration for all intervals during the workout and the aerobic energy system is being “tapped” too early.

THE NEUROMUSCULAR COMPONENT

Adaptation is defined as “a sum of modifications brought about by systematic repetitions of exercise” (Vigil). Structuring the individual cycles around specifically designed stimuli allows the body to adapt to increasing demands at both volumes and intensities. The three variables manipulated here are for volume, intensity, and frequency of training (Vigil). Just as the athlete is trained

with specific drills to increase speed, the body will adapt to these corrective actions by increasing stamina during the competition, maintaining a higher level of speed longer, and delaying the onset of fatigue.

Sprint drills, with focus on increasing tension in the calf and Achilles, allow for what is known as a “stiff spring,” causing greater reactive forces to the ground (Winckler). Specific drills also allow for an increase in extension of the supporting leg, greater swing of the free leg, and proper foot strike under the body’s center of mass.

As all top sprint coaches will attest, sprint drills are to be a primary component in the daily practice schedule. Constant repetition of these corrective movements allows for an increase in abilities previously listed, all resulting in more efficient sprint mechanics.

Training the athlete in efficient sprint mechanics is a cornerstone to every well-designed sprint program. Training for proper biomechanics is foremost. However if these abilities have previously been trained in practice sporadically, the athlete may still be at a disadvantage in competition. All in all, the Central Nervous System (CNS) becomes the “limiter” as to how the brain not only processes these exercises but, more importantly, how the brain uses these exercises in competition (Gambetta).

Research shows that for an individual to master a technique there requires a high level of practice—think the 10,000-hour rule discussed in several readings (Coyle, Epstein). While a naturally gifted athlete (with top speed and quickness compared to the average high school

athlete) would be the ideal athlete to have, most of the team needs these abilities trained—repeatedly. Structuring these trainable skills and elements of sprinting into practice *on a routine basis* helps train the Central Nervous System to tell the muscles the what and how of the movement. Generally speaking this is called Muscle Memory; yet current research calls this Deep Practice (Coyle).

Deep Practice is the repetitious practice of select skills/elements of a greater exercise multiple times over (Coyle). By scaffolding practices to train smaller components, the athlete's CNS, and ultimately the muscles, will only need to *put the pieces together* at race time. The chunking of these components allows the athlete to slow down the movements, find what and where the faults are, correct, and repeat these corrective movements.

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This repetitious training of the CNS falls in line with operation of the Central Governor Model (Magness). The CGM monitors corrective movements of the exercise and ensures the athlete will cease the exercise before there is a loss of homeostasis—i.e. fatigue. Training helps delay this onset of fatigue. And training the CNS in correct sprint mechanics allows the body to use all available energy systems more efficiently throughout the exercise.

One way to increase available en-

ergy is to increase the anaerobic capacity of the athlete (Magness). Repeat Special Endurance I training intervals not only helps the body increase anaerobic capacity, it also provides the stimulus for the neuromuscular component to adapt to greater training intensities. Likewise, aerobic runs allow for the adaptation of the CNS which will help the athlete adapt to higher training volumes. For short-sprinters this translates to structured Special Endurance 2/ Long Speed Endurance sessions at controlled intensities to strengthen the anaerobic energy system.

A 2001 study conducted by Paul Gastin examines the contribution made of aerobic energy systems to high intensity exercises. Gastin's results show that the "anaerobic system is capable of responding immediately to the energy demands of exercise and is able to support extremely high muscle power outputs." This is due to the sprint-trained athlete using his ATP-PCr energy system for the initial burst of energy at the start, and then the anaerobic system will supply the next 10-20 seconds of the race.

After this 20-30 seconds the anaerobic system will begin to deplete, and then the aerobic system is left to assist the athlete in completing the race. As the short-sprint athlete transitions from the 200m to the 400m this anaerobic system will deplete while aerobic contribution will increase. Training directed towards both of these systems will not change the time constraints involved in all three of these systems, yet sequential and repetitious training of these systems will allow the athlete to cover more distance in the time constraints.

The aerobic runs for a 100m/200m

athlete, approximately 15-20min in length for the high school sprinter, help the body recruit greater percentages of both slow-twitch and fast-twitch muscle fibers (Magill). These aerobic runs, when used offsetting the anaerobic training sessions, help strengthen all muscle fibers as well as helping the body adapt to depleted states of energy.

ANNUAL PLAN

While researching various 400m training programs this writer began to realize many of the top programs use a style similar to the 40-40-20 breakdown. Highly successful coaches such as Jimson Lee, Vern Gambetta, and Bud Winter write about breaking the 400m race into 3rds and how to train the different energy systems to handle each. Utilizing the talents of a short-sprinter and systematically training him according to this Critical Zone model not only will improve 100m and 200m performance but will also have the ability to move the athlete up to the 400m as his body matures into the junior and senior year of high school.

But to get to this point in the high schooler's training one needs to construct a preseason training cycle that will prepare the body for this type of work capacity. Our high school season breaks down as in Table 1 (next page).

Both the winter and spring seasons are considered one continuous season, while viewing the Indoor State Championships as a semi-peak goal with only a partial taper leading into the meet. Then the athlete can resume normal training after a week of active rest. The primary goal each year is the Outdoor State Championships at the end of May.

Table 1

Preseason Conditioning: 3rd week of September—2nd week of November
 Winter Track & Field season: 3rd week of November—end of February (Indoor State Championships)
 Spring Track & Field season: 1st week of March—Outdoor State Championships, 3rd weekend of May

PRESEASON MESOCYCLE

The General Preparation phase begins around the beginning of October. At this point the students have adjusted to their daily high school routine and have an understanding of their academic schedule. The Preseason phase is a 4-5 day practice week. The athletes will do two days a week of track work and 2-3 days a week of weight room work (the third lifting day is for varsity and veteran athletes). The weight routine is scaffolded where they will work 5-6 lifting sessions at a weight, two recovery sessions at a 15%-20% lowered weight, then increase the previous weight 5-10% (depending on the exercise) for 5-6 more sessions. This pattern is repeated throughout the fall and winter months plateauing mid-April.

The track sessions are where the athletes begin to develop their bodies to handle the Critical Zone training that will be started in November. These sessions include a mix of the following: Form & Technical Drills,

initial Speed Development/Anaerobic Power, Plyometric Training, and Aerobic Recovery runs. A typical week's practice is shown in Table 2.

(The purpose of the Dynamic Drill Routine is to teach proper sprinting mechanics and running form. Some examples of drills include: straight-leg run, A-skip, B-skip, high knees, forwards/backwards lunge, carioca, barefoot drills, wall marches, single-leg quick steps (on an elevated surface), etc.)

Many of these sessions are the same. This is most beneficial because (1) the technical aspect of track is being reinforced twice a week—once fresh at the onset and once in a fatigued state, (2) strength development of the upper body takes a larger focus on the week as a whole yet the athletes do not sense this from the two sessions listed, and (3) aerobic conditioning is built in 2-3 times a week while in a fatigued state. The third aerobic session occurs either Saturday or Sunday with no other work being done on that day.

In the book *So You Want to Be a Sprinter* Bud Winter tells that at the collegiate level it is a goal of his to get “each sprinter to run 10 miles without stopping (Winter, p. 61-61).” While this writer commends this feat to any track athlete, at the high school level, time and acceptance are two things that would fight against this. So the goal instead is to get the sprinters, and jumpers, to be able to run 20 minutes at a 7-8 minute per mile pace without laboring too intensely. If they are able to handle this pace, in conjunction with the work described below, their bodies have been properly prepared for the Critical Zone training that will start in November. At the same time as the athlete builds aerobic capacity 2-3 times a week, the athlete needs to simultaneously build the “neurological system, mobility, and technique” in relation to speed training (Mangicotti).

As mentioned previously, short-sprint distances beginning at the 100m and up use both the anaerobic and aerobic energy systems. From research conducted by Rob Duffield

Table 2

Day 1 (Monday or Tuesday)	2 x 100m striders with walk 100m between Dynamic Stretch—Hip Mobility Routine Dynamic Drill Routine (over 20m for preseason and progress to 40m by start of spring) Speed Development/Anaerobic Power Aerobic Recovery (10-15-20min jogs based on feel) Barefoot Drills Core Strengthening Routine
Day 2 (Wednesday or Thursday)	2 x 100m striders with walk 100m between Dynamic Stretch—Hip Mobility Routine Dynamic Drill Routine (over 20m for preseason and progress to 40m by start of spring) Plyometric Training (which include Bleachers and Hills) Aerobic Recovery (10-15-20min jogs based on feel) Barefoot Drills Core Strengthening Routine

and Matt Spencer (energy system contributions for 400m-800m and energy system contribution for 200m-1500m, respectively), there is much data on accurate percentages of contribution of each energy system as the competition distance increases.

Of particular interest for this report, the anaerobic contribution begins high at 80% (Spencer), not at a 100% starting point. The difference is due to the body using a different energy system for the onset of the sprint: Glycolytic Power (PCr) Energy System. This arrangement gives a 5-second burst of energy that allows the athlete to leave the starting position and begin the sprint. Training specific for this Glycolytic

Power system allows the following to occur:

1. More powerful movement out of the blocks
2. Ability to stretch the high percentage of the anaerobic system longer while delaying the aerobic contribution, and ultimately delaying the onset of fatigue.

Training at short distances and high intensities (i.e. maximum sprints of 10seconds) helps train this system, also known as Glycolytic or Alactic training. This type of training allows for little oxygen depletion and little lactate acid production in the muscles (Seagrave). Then as the athlete progresses to longer interval distances, i.e., Short Sprint Endurance (SSE), these distances

will assist in training the anaerobic energy system.

Training at this system also causes a lack of lactic acid build-up (Crick). Hence athletes should train at their top speed for distances no more than 60m at higher intensities over the earlier parts of the season. Speed Maintenance (i.e., LSE) will train the athlete to focus on maintaining this higher speed for longer distances.

Part 2 will continue in Track Coach 212 and will cover Precompetitive Mesocycle 1, Winter-Spring Transition, Competitive Mesocycle & Taper (April-May), and Benefits and Rewards.

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