USATF

TRACK COACH

2017 / ISSUE 219

TRACK COACH

Spring 2017 I 219

The official technical publication of USA Track & Field

USATF

TRACK COACH

FORMERLY TRACK TECHNIQUE

219 I SPRING 2017

The official technical publication of USA Track & Field

USATF

ED FOX.....PUBLISHER
RUSS EBBETS.....EDITOR
TERESA TAM.....PRODUCTION & DESIGN
FRED WILT.....FOUNDING EDITOR

PUBLICATION

Track Coach is published quarterly by Track & Field News, 2570 W. El Camino Real, #220, Mountain View, CA 94040 USA.

The Summer 2017 issue (No. 220) of Track Coach will be e-mailed to subscribers about July 1, 2017.

SUBSCRIPTIONS

$20.00 per year, U.S. or foreign. Track Coach became a digital-only publication in 2015.

BACK ISSUES OF TRACK COACH

Many back issues of Track Technique/ Track Coach, #92-208, are available singly at $5.50 (U.S. delivery)/ $9.50 (foreign delivery) each post-paid. No issues previous to #111 are available.

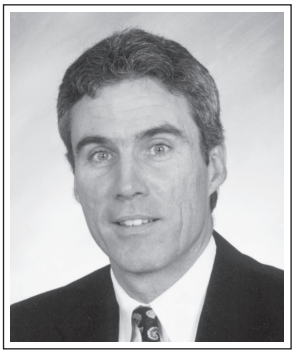
To order, send your check to

Track Coach
2570 W El Camino Real,
Suite 220,
Mountain View, CA 94040

FROM THE EDITOR

RUSS EBBETS

THE WALK



In my professional career I have probably given 1000 lectures, maybe more. During that time I have had three instances where someone from the audience purposely disrupted what I had to say. It's one of those things one can laugh at later, but while it is happening, not so much. You quickly cycle through several thoughts—what is happening? Is there a health crisis? Why is this happening? And once you figure it out you must decide what to do about it.

In two of the instances the interrupter quickly exhausted what he had to say and I got to continue. In the third instance the disruptor had to be physically removed from the room. He was grabbed by both arms and escorted towards the door. The audience got quite a show. The topic I was speaking on was the race walk!

The walk has a long and storied history in track & field. If you do some research you'll find some interesting and unique facts about this discipline. Did you know that the walk was started by "footmen" back in the horse and buggy days? A footman was a servant who walked alongside a horse carriage back in the 1800's. Footmen fast walked as the carriage went along. To jog or run would be uncouth.

And did you know that back in the days before video games and reality TV walking endurance contests were held where competitors tried to walk 100 miles in a 24-hour period, averaging a little over four miles per hour? Those successfully completing this task earned the right to call themselves Centurions. Even more astounding was the group that would walk one mile every hour for 1000 straight hours (41 days). The first Ironmen?

The walk has been part of the Olympics since 1904. In that Olympics the walk was part of a decathlon-like event where they walked 800m. In 1908 the walk became a stand alone event and has been contested ever since. Women got the chance to walk in the Olympics in 1992. The United States has had participants in all these Olympics but has had little to show for it. Since 1972 the US has not medaled in the Olympics or World Championships. Fifty-five years is a long time.

As a high school and college coach in New York State I had success coaching the walk. My high school program produced two guys back to back who won a NY State championship, Empire State Games gold medals, IC4A, Penn Relays and even a Junior National Championship. One of the guys once held the U.S. junior record for 3000m. There were other men and women who won league titles and had nice careers.

CONTINUED ON PAGE 6995

IN DEFENSE OF THE FREE TAKEOFF

Another defense of Vitaly Petrov's pole vault technique model by long-time Tennessee coach Jim Bemiller.

BY JAMES H. BEMILLER, J.D.

I read with some consternation Mr. David Bussabarger's recent article, "The Pole Vault Takeoff", in a recent edition of USATF's professional journal *Track Coach* (#216, Summer 2016). Bussabarger introduces the main topic of his article to promote his upcoming book, "to question the so-called free takeoff or the model developed by Ukrainian coach Vitaly Petrov. The Petrov model, particularly his free takeoff concept, was simply a hypothesis with no basis in the real world…" (Bussabarger, 2016).

Bussabarger further characterizes his interpretation of Petrov's beliefs: "…that the fiberglass vaulter should take off "out" and emphasize jumping directly upward at the instant of takeoff in order to produce overhand rotation in the pole to move it to vertical. At the same time the vaulter should avoid bending the pole until he/she is airborne (this and taking off "out" are the most common ideas associated with the free takeoff)." Bussabarger has spent several years attempting to deconstruct what he describes as fundamentals of the Petrov model. He has stated previously, "The writer (Bussabarger) has recently been engaged in a long online debate with advocates of the Petrov/ Bubka technical model." (Bussabarger, 2013).

Unfortunately, Mr. Bussabarger's underlying stated core principles regarding coach Petrov's concepts of vaulting are so critically and fatally flawed that whatever value contained in his following arguments become pointless. Bussabarger sets up a classic Straw Man argument. The Straw Man fallacy is committed when a person simply ignores another person's actual position and substitutes a distorted, exaggerated or misrepresented version of that position.

Bussabarger points to no primary reference sources from Petrov to substantiate his interpretation of Petrov's technical model. Bussabarger describes Petrov's model, "That is, the fiberglass vaulter should take off 'out' and emphasize jumping directly upward at the instant of takeoff …" (Bussabarger, 2016). To use Bussabarger's own words, this statement is a concept with no basis in the real world.

Serious review and critique of a coach's technical beliefs should dictate the examination of coach

Petrov's professional explanation of his views. Relying on secondary sources, such as others' interpretations, 'online debate', and relayed second hand conversation is not serious inquiry, lacks rigor and is a disservice to the subject, in this case coach Petrov.

Rather than relying on popular misconceptions, as Bussabarger does, let's instead look to original source material with regard to Mr. Bussabargers' two stated underlying assumptions.

First Incorrect Postulate—Bussabarger incorrectly states that Petrov advocates that "the fiberglass vaulter should take off 'out'" (Bussabarger, 2016).

Petrov stated over 30 years ago in his 1985 address to the European Coaches Congress, "...the position of takeoff must be strictly beneath the grip of the upper hand. (Petrov, 1985). To emphasize the point, in the next paragraph he stated, "The question of where one should take off—before or after the vertical—should not be a matter for discussion, in so far as the vaulter can raise the pole to the maximum above the track only standing on the vertical beneath the grip." (Petrov, 1985).

In later writings Petrov does not even mention a takeoff point specifically but states, "The pole must be smoothly transferred to the plant position when the vertical takeoff plane is crossed." (Petrov, 2004)

In describing his emphasis on a well-executed takeoff Petrov also explains, "…The plant ends in a swift body extension which must take place before the pole touches the back wall of the box." (Petrov, 1985). Would Bussabarger have us believe that the vaulter should attempt to contact the back of the box with an incomplete extension of the body?

In his article, "Reviewing the Revolutionary Form of Wladyslaw Kozakiewicz" (*Track Coach* #202, 2013) Bussabarger touts the technique of the 1980 Olympic Champion and former World Record Holder. "Kozakiewicz maintained excellent erect posture in the final strides of the run and into the beginning of the takeoff… Kozakiewicz's takeoff point was located directly under his top hand." Bussabarger's own analysis mirrors Petrov's criteria regarding proper step and takeoff referenced above. In this writer's opinion, perhaps Bussabarger misconstrues Petrov's following statement:

"We do not share the view of those who say that the takeoff in vaulting is distinct in that there is no free takeoff. Straightening the drive leg, pressing the pole perpendicularly, and that this helps in this initial bending. We approach this differently.

"The vaulter's task is to drive the pole at takeoff as much as possible and to give himself a free takeoff with transfer at the end into a smooth takeoff, but the vaulter should not feel for a smooth support, only a smooth plant." (Petrov, 1985).

Restating the above concept, Petrov is presenting an alternative to the widely held belief at the time that a vaulter must take off under and force bend the pole through takeoff. Rather, a free takeoff will reduce losses in horizontal velocity as the vaulter maximizes penetration through the highest possible position of the pole at takeoff and a smooth transition onto support of the pole as he leaves the ground.

In the IAAF Journal he writes of the takeoff:

"The efficiency of this phase depends on the vaulter's skill in the drop/takeoff junction, on whether he/she is able to begin the push before the pole is set against the box. The pole must be smoothly transferred to the plant position when the vertical takeoff plane is crossed." (Petrov, 2004).

In summary, Petrov states that the proper position of the takeoff foot is directly below the top hand and the takeoff should be executed with full extension prior to the pole grounding against the back of the box. No referenced primary source material states Petrov advocates taking off "out" as Mr. Bussabarger proclaims in many of his writings. Therefore, his continued criticism is based on a false premise, which he seems determined to perpetuate.

Second Incorrect Postulate— Bussabarger incorrectly states that Petrov advocates that vaulters should "emphasize jumping directly upward at the instant of takeoff" (Bussabarger, 2016). He follows by stating, "If the vaulter attempts to execute a free takeoff as Petrov recommends, he/she will be working directly against the development of forward takeoff drive" (Bussabarger, 2016).

Again, Bussabarger attributing these statements/ideas to Petrov is inaccurate and misleading to the reader as they are not found in credible source material. We should instead examine what Petrov has actually said regarding the push and penetration phase.

As early as 1985 Petrov stated, "The vaulter's task is to drive the pole

at takeoff as much as possible…" (Petrov, 1985).

"Of great importance in pole vaulting is the depth of the body advancement forward during the takeoff… The quickness and depth of the takeoff greatly influence the technique of all the next elements of the vault: the hang, swing and rock-back." (Petrov on Technique, ?year).

Rather than jumping directly upward as Bussabarger claims, Petrov again reiterated his ideas on the subject, "Of great importance is the depth of the body's forward advance during the takeoff." (Petrov, 2004).

Of course there is a vertical component to the takeoff which Petrov incorporates, "…during the whole movement from the takeoff he (the vaulter) must aim to 'rush' as deep upward as possible, trying to reach the left elbow with his head. The foot is placed for the takeoff firmly with a quick roll-up on the ball of the foot." (Petrov, 200?) Petrov writes that a primary purpose of the support-pushing part of the vault is, "To perform the drop and plant with minimal losses in horizontal speed at the angle of 20° - 22°, e.g. at a tangent to the future swing on the pole." (Petrov, 2004). This is very similar to the long jump takeoff angle for elite males, ~20° (McGinnis, 200?).

Therefore, Bussabarger stating, "Petrov's free takeoff theory, which is almost universally accepted, claims that the vaulter should avoid driving forward into the pole at takeoff" (Bussabarger, 2016) is another example of misunderstanding of what Petrov has described in the above referenced material.

In summary, as the above referenced quotes reflect, a reasonable understanding of Petrov obviously stresses the priority of maximizing transfer of kinetic energy through takeoff by horizontal penetration. He describes the takeoff in terms of "a quick roll-up on the ball of the foot." No reasonable person could conceive that Petrov advocates "jumping directly upward at the instant of takeoff" as Bussabarger incorrectly states. Bussabarger would have us believe Petrov advocates a 45° - 90°, takeoff? I am not sure what Mr. Bussabarger is trying to attribute to Petrov, but I am sure that "jumping directly upward at takeoff" is not proposed by coach Petrov.

CONCLUSION

Unfortunately, because Bussabarger's interpretation of Petrov's concept of a free takeoff is a misinterpretation and oversimplification of what Petrov has stated, he (Bussabarger) makes another unreasonable criticism. Mr. Bussabarger criticizes the difficulty of the free takeoff model as a deficiency, "Petrov taught this technique to Bubka. Ironically even Sergey Bubka had difficulty executing a free takeoff consistently and very few if any other elite male vaulters employ/employed a free takeoff as proposed by Petrov." (Bussabarger, 2016).

This writer does not interpret the exacting nature of Petrov's free takeoff model as a negative aspect, rather a proposed concept of ideal technique which is to be pursued. Ted Williams, one of the greatest hitters in the history of baseball intensely studied the science of hitting. His lifetime batting average was .344. Although Williams was his sports foremost authority and practitioner he still only hit successfully a little over 3 times out of ten attempts, and the vast majority of those hits were not home runs. Many a runner has studied and trained for the perfect race but can only replicate it infrequently, if ever. Obviously, pole vault coaches are aware that due to many variables each approach and takeoff will vary slightly. The takeoff point will vary from attempt to attempt. The takeoff angle will vary with each attempt. Of course, Petrov, as with any reasonable coach, would understand these variations. How many long jumpers hit the board in exactly the same spot on every attempt (and they do not have to carry and drop a 17-foot pole)? Pursuing a sound model of technique may rarely be ideally achieved and still result in outstanding performances.

The performances and records of the athletes Petrov has coached over the last 30 years should lend credence to his views. Even though his athletes may not have exhibited flawless technique on every attempt, they performed exceptionally well. We should be impressed by Bubka, Tarasov, Gibilisco, Isinbaeva, Braz and the many other coaches and athletes who have been influenced by his work and writings. For three decades Petrov has consistently helped athletes perform at the highest level. The 2016 Olympic record victory of 22-year-old Thiago Braz, coached by Petrov, winning over the superlative defending Olympic champion should alone give Mr. Bussabarger pause to reconsider his flawed interpretation of the core tenets of Petrov's model.

Personally, as the coach of an Olympic Champion and six-meter vaulter, I hold Petrov's work in the highest regard. Coach Petrov's writings and instruction at clinics has been invaluable in my education as

a coach. Of course he is not the only coach I have studied closely, but he should be given his due. He has proven through his results and assistance to other coaches that he is the John Wooden, Knute Rockne, Bela and Marta Karolyi of our event. Seven of the last eight men's Olympic Gold Medalists show aspects of his model and influence. Therefore, I find it necessary to submit this response to Mr. Bussabargers' version of Petrov's views of the pole vault.

Coaches should be discerning when analyzing various views on a multi-faceted event such as the pole vault. Success will be determined by choosing wisely to selectively adopt sound philosophies that will compliment your experience and resources. Study the commonalities of success to distill the fundamentals of performance.

In summary, achieving a consistent out step, and jumping straight up is not the determining basis for exhibiting success in the Petrov model. Unfortunately, misconceived discussion of the outside step has wasted several decades and overshadowed the many benefits of coach Petrov's model. But, that discussion is for another day. Mr. Bussabarger has written extensively regarding the pole vault based on his observations. Coach Petrov has studied source material and tested his theories in the competitive arena with great success. Bussabarger's latest article tells us he is promoting his upcoming book with Bruce Caldwell. My advice to coaches would be to rely on primary sources or properly referenced material. Discern and choose wisely. Caveat Emptor.

Jim Bemiller has coached athletes who have broken the Olympic, NCAA, American, and American Junior records in the pole vault. He coached 2004 Olympic Champion Tim Mack (6.01m) and was the collegiate coach of 2000 Olympic Silver Medalist Lawrence Johnson (5.98m), the current NCAA record holder. He is an associate professor in the Department of Kinesiology and Sport Studies at the University of Tennessee and serves on the USATF pole vault advisory board.

RIO RELAY REDUX

Sprint relay analyst Dennis Grady is back—this time looking at U.S. 4x1 success and failure at the Rio Games. As usual, he doesn't pull his punches.

BY DENNIS J. GRADY, USATF LEVEL II COACH

Believe it or not, track and field relays were invented in the United States. The first one took place at the Penn Relays in 1893.

Stan Huntsman, *American Track & Field,* Spring 2005

It's just that each staff has its own ideas of how the stick should be passed. There is a lot of skill involved; there are a lot of aspects to passing the baton, and if one of those aspects goes wrong, then you get messed up. We've just got to fix it.

Dennis Mitchell, as an athlete, in Nov. 1997, *Track & Field News,* USA Relay Coach, 2015-present

I think the Americans are more focused on beating us than running a proper race. So yes, it is the pressure of beating Jamaica.

Asafa Powell, Jamaican sprinter, *Track & Field News,* Oct. 2016, after Jamaica's 7th straight gold vs. the USA.

At The XXXI Summer Olympiad at Rio last August, the U.S. squads kept their fans on the edges of their seats wondering what would go wrong this time. The women managed to get a reprieve from their prelim mishap at the second exchange; they won the gold medal with a time of 41.01 seconds running in the "dreaded" lane one.

The men's 4x1 was disqualified—repeating the same DQ at the Berlin prelim (WC, 2009)—when Mike Rodgers touched Justin Gatlin's hand with the baton before the baton was in the exchange zone (Rule 170.7). Judging by Mike Rodgers' post-race interview with NBC, one would never guess he was on that team in Berlin and should, therefore, be well aware of the rule that had cost him a medal and money.

THE WOMEN

The U.S. women's prelim team consisted of Tianna Bartoletta (Gold, Long Jump), Allyson Felix (Silver, 400), English Gardner (7th, 100), and Morolake Akinosun. The team ran 66.71 in the prelim; 41.77, in the rerun. Tori Bowie, 100-silver and 200-bronze medalist, came aboard to anchor the final. The one substitute allowed all three passers to remain the same. All ended well for the U.S. women, but all was anything but well for the prelim.

My analysis of the second exchange: Felix is coming into her approach running in the outside half of lane 2, just as she should. The Brazilian

VICTOR SAILER/PHOTO RUN

Legs 3 and 4, Gardner to Bowie, finish the 4x1 victory for the USA in 41.01.

third leg in lane 3 starts to accelerate for her changeover hugging the lane on the inside just as Felix is passing and hits Felix with her arm on her backswing. This causes Felix to break stride and when she cannot reach Gardner's hand with the baton she throws the baton at her. (The contact did not cause the baton to go "flying" or be "knocked away", as some reported). The baton goes to the track and for a while Felix and Gardner are distraught at what has happened. Eventually, Felix retrieves the baton and passes it to Gardner, who runs her leg and passes to Akinosun who finished the race.

The U.S. appeal was granted, Brazil was DQ'd for interference, and the same U.S. foursome was allowed to qualify on time that evening, knocking the Chinese squad out of the final. The women were assigned lane 1, even though they had the fastest qualifying time, two-hundredths of a second faster than the eventual silver medalists Jamaica. The silver lining of running in lane one? The stagger was made up before the first pass, so no distractions at the exchanges. Plus, unimpeded sight lines are a given.

Felix has been given a lot of credit for having the presence of mind to retrieve the baton and have the U.S. finish the race with "a bona fide effort" (Rule 163.2), and then file the protest for interference. But given the amount of time before Felix acted, I can't help thinking that one or more of the U.S. coaches near the exchange yelled to Felix and prompted her to act. Felix got the credit, which is fine, but if there weren't U.S. coaches nearby yelling instructions to her, then someone should be asking, why not. The time delay and Felix's head turning towards the stands suggests to me she got an assist.

There was also some debate whether it was necessary for the U.S. to finish the prelim in order to have their protest upheld. Don't believe everything you hear from the TV commentators. My concern was that throwing the baton might not be construed as giving a "bona fide effort." It seems to me that Felix, understandably after all her trials and tribulations at the U.S. trials and the Olympic 400 finish,

may have understandably panicked when bumped by the Brazilian runner. Throwing the baton is never a good idea.

In the final all three outgoing runners used a two-point stance and the only problem I saw was Gardner running a little too much in the outer part of the lane, and after she passed to Bowie and avoided tripping her, she had to step into lane two to keep her balance. Luckily, the Canadians in lane 2 were more than two seconds behind the U.S. and there was no chance for any interference.

The American women now have a five medal-winning streak going since 2009: 3 Gold, 2 silvers, and a World Record (**40.82**). I think it safe to say that they have benefitted from keeping the substituting to a minimum, using two-point stances for a better view of the go mark, and utilizing the downward passing technique many have long advocated.

One thing might help—a practice meet could be arranged before the Big Show, which will prepare them for the inexperienced teams they may have running next to them as a result of the random lane draws for relay prelims.

THE MEN

The men's prelim team consisted of Mike Rodgers, Christian Coleman, Tyson Gay, and Jarrion Lawson. Justin Gatlin (100m silver medalist) and Trayvon Bromell (100m, 8th) ran in the final on the second leg and anchor.

My analysis of the U.S. men's effort will be brief: For the sixth time in seven majors the men came away empty-handed. The Jamaican men struck gold for the seventh straight time (So much for the law-of-averages, an excuse former relay coach John Drummond offered for U.S. failures). The Japanese men—with their underhand passing and standing two-point stances—beat the U.S. for their first ever Olympic silver medal (**37.60**), a national record and #3 on the nation rankings.

IN WHAT OTHER SPORT DO ATHLETES PRACTICE DIFFERENTLY THAN THEY PLAN TO PERFORM IN THE GAME?

The Japanese success using an underhand passing technique will, undoubtedly, rekindle the debate that this method is *the* cure for what ails the American men's 4x1 teams. I have disagreed with this for a decade and see no reason to change my mind now. What do the Jamaican men and women do? Same as we do, only their men are more successful. (More on passing later).

Since the debacles at the 2008 Beijing Olympics and the 2009 Berlin World Championships, when neither U.S. 4x1 relay even made the finals, the one question I keep asking is: how do the U.S. sprint relays prepare? Readers may be surprised at how preparations differ every time. Prior to the Berlin WC's the U.S. women ran in two meets with two full teams, the men ran one team in both meets (See *Track Coach #190*, p. 6058). This year before Rio neither squad ran in a meet and prepared by attending a relay camp in Texas, before heading to Rio. (Workout Wednesday: 2016 Team USA Men's 4x1 ...—flotrack.orghttps://www.flotrack.org/video/987439-workout-wednesday-2016-team...). Why wasn't there at least one meet where the teams could compete under race conditions, with other teams in the next lanes? The answer may be that the scheduling of the qualifying meets before the Olympics is done for the benefit of other events, not the sprints and, especially, not the relays.

The Flotrack video shows the men practicing in non-meet conditions: no one else is running in adjacent lanes at the same time to reinforce the possible distractions; no noise to simulate the crowd (Flotrack did add some fine music to their video); and, using voice commands for the stick, which Rodgers and Gatlin did not use at the first exchange. "I wasn't necessarily looking where the exchange was in the exchange zone. I was doing the proper steps getting out," said Gatlin. That means he counted a certain number of steps, likely 6, and then put his hand back. This was same technique that led to the DQ in '09 between Shawn Crawford and Darvis Patton. This technique is the so-called silent pass (instead of waiting for the voice command, supposedly because the crowd noise is so loud)—the outgoing runner takes a certain number of steps and then puts his hand back. The problem is that six steps will not cover 12 meters, the 10m from the fly mark plus the two meters inside so that the extended arm is *in the zone.* And as I mentioned, on the video they were using voice commands. In what other sport do athletes practice differently than they plan to perform in the game?

Interestingly, if you watch the final the Jamaican men in lane 4 next to the U.S. in lane 3, were also very close to having an early touch. The

difference being that Asafa Powell did not immediately try to place the baton in Blake's hand, but was patient and waited until he was sure the baton was in the zone.

The truth is that most of the athletes running for their country's 4x1 teams haven't had a lot of experience with running relays at this level. The British anchor man ('09) or the Brazilian third leg (Rio) likely never had a team in the adjacent lane so far ahead, as the U.S. or Jamaicans could be. Shouldn't U.S. athletes be aware that other teams are not as fast and that the random lane drawings may put them between two slow teams? And Holland didn't make the Rio women's final when Dafne Schippers left early for the first exchange. She thought she saw her incoming lead-off runner, but it might have been the leadoff runner in the next lane who may have drifted into her lane. Another reason to use a two-point stance.

Looking ahead to the 2017 World Championships in London this summer, here again are my suggestions to USATF for preparing the U.S. sprint relays for success:

Schedule at least one practice meet after the National Championships or Trials when the potential team is known. If that is not feasible, hold a mandatory relay camp and practice in competition-like situations. Invite local athletes to role-play other nations, play loud music, have exchanges going in several lanes (runners staggered to provide distractions), and even possibly hire an IAAF official to come and watch and answer questions the athletes, and coaches, may have.

Risk and Reward: Limit substitutions for the 4x1. Use them for the 4x4 where there is little risk on the exchanges. At Rio the men used two subs and had three new exchanges from the prelim to the final. All that risk for a .02 second gain or to rest a "star" or two! Not worth it even without the DQ. With a little adjustment of the marks the U.S. men's prelim team could easily have shaved .3 seconds off their qualifying time and that would have been good enough for silver.

Two-point stances: Leaving consistently on time is easier if you can see the go-mark clearly and comfortably. Those who argue the acceleration of the outgoing runner is hampered are deluding themselves. The distance to the tape is adjusted for the runner's incoming speed and where you determine you would like the exchange to occur in the zone.

As I have written before (*Track Coach #206,* p. 6567): Consider that a runner, who could be thrown in at the last moment to run a leg on the 4x1 relay, has had little practice with the IAAF rule of one mark. He is nervous, the crowd is loud, the runner is hot and sweating and we have him practically upside down looking back, sweat in his eyes, blood flowing to his head and we expect him to have a clear view of the tape and the incoming runner? Now, factor in the additional pressure of an Olympic opportunity. We want our relay runners calm, cool, collected, in control and confident that they are ready.

Some critics have called using this takeoff position "starting like a high school team" (*Track Coach #213,* pp. 6742-3). Tell that to the Japanese men who are wearing the silver medals. Allyson Felix and the U.S. women use it, both U.S. anchors in London '12 did also, and more nations like China, Great Britain and Canada will likely adopt it. And in the past, the U.S. men's 4x1 have used it. At the 2000 Sydney Olympics, the last Olympic gold for the men, the second and anchor legs for the U.S. men used two-point stances. Back to Basics is not just a slogan. For the U.S. men it is a necessity. (Video available on internet),

Under-Over-Push Pass: This debate has been going on since the French men used underhand passes back in 1990 to break the World Record (**37.79**). The success of the Japanese at Rio will reignite the debate. Is it safer? Possibly. Fail safe? Not likely. Is it faster? No. With the underhand pass the runners are closer together (more risk of clipping heels) and the baton must be adjusted by the receiver to position it for the next pass. The Japanese appear to avoid this adjustment by partially overlapping their hands during the pass. This requires them to both hold on to the baton longer and because they are passing deep in the zone, there is a greater risk of being out of the zone before the pass is completed. The French women were DQ'd at the 2013 Moscow Worlds for just that reason, which is how the U.S. women moved up to silver.

I do not support any change from the current passing technique which the U.S. now uses, as do the Jamaicans. Not to mention thousands of high schools and colleges throughout the U.S. of A. The question of which method to use is as settled, for me, as is the false-start rule.

RIO NOTES

Total Passing Failure rate: 32 teams in prelims; 16 teams in finals

gives 48 attempts. DQ's and 1 false start: total 5. 10% Failure rate. Using just passing DQ's, 1 out of 48, the U.S. men: 2% failure rate. So much for Dr. Ralph Mann's excuse that "These relays are always a disaster waiting to happen, which is why the failure rate is 25 percent."

No DQ's in the women's final; two in the men's: Trinidad & Tobago (Rule 163.3a); the USA (Rule 170.7)

Use of subs: Four countries used substitutes—The U.S. and Jamaican's men and women's teams, along with the Canadian and British men's teams. Three of those substitutions were for the anchor leg only, the safest, in my opinion, to use (U.S. women; Canada and British men). The U.S. and Jamaican men subbed legs 2 and the anchor. The Jamaican women, oddly, subbed for the first and second leg. (Their new second exchange cost them any hope of the gold medal.)

Improvement for the Men: Every team ran faster in their final than in the prelims, with the exception of Brazil and China. The biggest drop in time for the men was .67 seconds for the Jamaicans; the smallest was .08 sec. for Japan. The DQ'd U.S. men managed a .02 second improvement, which makes you wonder why use two subs at all?

Improvement for the Women: Once again, every team ran faster except Canada and Nigeria. The U.S. dropped .76 second for the best improvement; Germany's .08 second drop in time was the smallest.

Conclusion: The U.S. relay program continues to be a hit-or-miss proposition. The protocols that were established after the '08 and '09 disasters have apparently been disregarded. The U.S. men sprinters could use a good sports psychologist or two (Did everyone notice the body language of the U.S. athletes compared to the Jamaicans in the tunnel before the relay final on the NBC broadcast?). And Asafa Powell may be right about the American men sprinters having difficulty handling the pressure of Olympic and World Championship competition, which goes back to the mid-1990's when the Canadians won gold three times in a row.

One last quote from Benita Fitzgerald Mosley, former USATF Chief of Sport Performance (*Track Coach #190,* p. 6060): *USATF can draft the perfect exchange philosophy and bring in the utmost expert to demonstrate it to its coaching staff and athletes, but at the end of the day, the execution needs to improve-and that's on the runners.*

The confidence the U.S. men need to regain doesn't come from a secret camp, but comes from meaningful practice, preparation and actual competition on the track.

The 4x100 and 4x200 Meter Relay Exchange

THREE LAWS GOVERNING RELAY EXCHANGES

1) Never leave the zone without it. Just because an exchange isn't perfect is no reason to give up on it. The outgoing runner, nearing the end of the exchange zone without receiving the baton, should open up, turn around and look for the baton, slowing up, if necessary. A poor exchange beats no exchange every time.

2) Always finish the race. If the baton is dropped, pick it up! Don't just stand there and argue about who is to blame. And don't disqualify yourself because you think you were out of the zone. If the "stick" is in the zone, the pass is legal. Let the officials do their job; your job is to finish the race. Stick to it!
DNF (Did not Finish) usually means "you quit!"

3) Timing is really everything. We are talking hundredths of a second. Don't fall asleep at the switch by leaving too late; don't jump the gun by leaving too early. Coaches may debate which is worse. I side with the leaving late. With Law #1 firmly in mind, a runner leaving early can salvage the race. On the other hand, if a runner leaves late, the time lost is gone for good. The worst-case scenario happened one year at the Pan American Games. The outgoing runner was talking to someone and didn't realize the race had started until his teammate went whizzing by.

A replacement for that runner is the only cure.

THE BASIC RULES AND PROCEDURES

are fairly straight forward and widely known.

- Lanes all the way. Make sure you know your lane and the order you are running before you go to your exchange zone.
- The baton stays in the middle of the lane all the way around. The two curve runners (legs #1 & #3) will run on the inside part of the lane -to save ground- and will carry the baton in their right hands. The straightaway runners (legs #2 & #4) will favor the outside of the lane carrying the baton in their left hands. This right-left-right-left sequence, as well as the inside-outside-inside-outside positioning of the runners, is ***most critical*** for good alignment of the runners as they pass the baton and **prevents heels from being clipped and outgoing runners being tripped**. These positions also keep the baton out of harm's way; yes, the stick is sometimes knocked out of a runner's hand!
- The baton, not the receiver, must be in the 20-meter exchange zone when the pass is made. Make use of the 10-meter acceleration zone, which is allowed in the sprint relays.
- Know the rules pertaining to marking your "go marks," whether with tape-not always allowed, or with half tennis balls, sometimes only to be placed on the outside line of your lane. ***Only one mark for the pros!***

Responsibilities of the Incoming Runner:

- Attack the zone. Do not slow up or relax until the baton is passed.
- Don't **collide** with the next runner in the adjacent lane. (leg 1 & 3)
- Share the stick. You get the lower half, the receiver gets the upper half.
- Maintain good running form. Running with your arm extended slows you down. Winding up to make the pass is a waste of time.
- **Speak first, then reach**. Do not give the verbal command of "stick," "go," or whatever, and reach at the same instant. Give the command, keep running, and wait for the outgoing runner's arm to extend, then reach and place the baton in the open hand.
- Do not release the baton until you "see" it into the hand of the outgoing runner. ***The baton should never be dropped!***
- Stay in your lane, but don't worry about running out of the zone- you are allowed.
- Always look back before exiting the track, someone may still be running behind you.

Dennis J. Grady,
USATF Level II Coach
Sprints/Hurdles/Relays (last revised Jan. 2017)

Responsibilities of the Outgoing Runner:

- Step off the distance (determined after repeated practice) to your "go" mark. Place your mark, usually half a tennis ball or tape. Return to your starting position inside the acceleration zone. You must be inside and remain there when the gun starts the race. ***Use a two-point stance for your start***.
- Increase go-mark distances as you progress through your season. Peak!
- Stand in front of the Acceleration Mark, not on or behind it. Possible DQ.
- Make the incoming runner catch you. Position your feet for a fast takeoff and good line-of-sight to your "go" mark.
- Trust your mark and accelerate 100%, no holding back. (In the 4 x 200 relay, hold back some - go at 75%-85%, depending on how strongly the incoming runner finishes a 200m run).
- ***Never extend your arm to receive the baton before you enter the exchange zone.*** This comes into play more with the 4 x 200 relay when trying to "shorten" your slowest leg. **'09 and '16 mistake by US men's 4x1!**
- When you hear your incoming teammate give the verbal command, extend your arm straight back, horizontally, with the palm up, fingers together, thumb extended making a v-shaped target for the pass. Hold steady by pushing the upper arm inward towards your spine. Don't turn your head or look back; remember, it's a ***blind exchange***. See Rule 1.
- When you feel the baton, grasp firmly and fly.

PSYCHOLOGICAL FACTORS OF BURNOUT IN FORMER/RETIRED ELITE-LEVEL RACE WALKERS IN THE UNITED STATES

JOSEPH RAYNER, JUAN GONZALEZ, LAWRENCE EARL T. PABALINAS, MONICA SANTOS, NELSON GALLOSO, EDUARDO ARAMBULA
HUMAN PERFORMANCE LABORATORY
DEPARTMENT OF HEALTH AND HUMAN PERFORMANCE
COLLEGE OF HEALTH AFFAIRS
THE UNIVERSITY OF TEXAS RIO GRANDE VALLEY
EDINBURG, TEXAS 78541

PURPOSE: To determine and extrapolate the causation of psychological factors of burnout in former/retired female and male elite-level race walkers (N=75) in the United States (U.S.).

METHODS: Seven factors of burnout were derived and analyzed based on the subjects' responses to a non-validated anonymous online survey. This research was analyzed through exploratory analysis with an eigenvalue set at 1.00 using varimax rotations. These seven factors retained 75.99% of total variance which were accounted for and explained by the factors success (1), accomplishment (2), fatigue (3), apathy (4), awareness (5), appreciation (6), and lack of marketing (7). An independent t-test and a one-way ANOVA were conducted to determine a significant difference in responses between genders.

RESULTS: Profile analysis/one way

repeated measures analysis of variance of the seven factors indicate statistical significance and efficacy based on the Partial eta^2 of 0.489 using the Lower-bound being 49% of the total variance explaining the differences among the seven factors. Across all factors, factors 5 and 7 scored the highest means, which indicated the most significant impact of burnout while factors 1 and 2 demonstrated the least impact. Both the independent t-test and the one-way ANOVA found no significant ($p<.05$) differences in responses to factors 1 (.615), 2 (.611), 3 (.820), 4 (.633), 5 (.760), 6 (.854), and 7 (.369) between genders.

CONCLUSION: Based on the profile analysis, the common underlying factors in this research investigation narrowed down to "Awareness" and "Lack of Marketing" in U.S. race walking. This represents crucial components to the declining state of elite-level race walking as well as the most significant impact of burnout in former/retired female and male elite-level race walkers in the U.S. The results of this project will assist in identifying influential factors of burnout, hence improving the future of the sport in the U.S. The continuation of research on elite-level race walking burnout is imperative for the growth of the sport and the well-being of these athletes.

INTRODUCTION

The purpose of this study is to provide an in-depth layout of psychological factors that influence burnout in former/retired female and male elite-level race walkers in the United States. For this study, an anonymous online survey was conducted on former/retired female and male elite-level race walkers through Qualtrics, an anonymous online survey website. Likert scale survey questions were used and the questions were analyzed quantitatively using a Statistical Analysis Package for the Social Sciences (SPSS), one of the most commonly used software packages for survey analysis. This is an SPSS sav data file with raw data, variable and value labels. The results of this investigation add to the body of literature and knowledge as well as to serve as the foundation for future research. This study points out influential factors of burnout which can potentially direct the coach-athlete relationship, thereby improving the future of the sport in the U.S.

BURNOUT HAS ALSO BEEN EXPLAINED AS AN EXCESSIVE REQUIREMENT OF ENERGY, STRENGTH, AND RESOURCES WHICH LEAD TO EXHAUSTION

BACKGROUND ON THE SPORT OF RACE WALKING

The sport of race walking has been in the Olympic Games since 1904 as part of the track & field program. The major distinction between the running events versus the race walking events can be seen in the technique that makes race walking unique. The sport is composed of two major technique rules. The first rule requires maintaining foot contact at all times. The second rule is that the supporting leg must be straight when contacting the ground.

As far as officiating, red cards are issued in race walking if any or both of the two rules are broken. Upon receiving three cards, the athlete is disqualified. The two major events for race walking are the 20km and 50km race.

To qualify for the men's Olympic race walking team, the qualifying time for the 20km was 1:36:00, while it was 4:45.00 for the 50km. For the women's team in 2016, the qualifying time for the 20km event was 1:48:00.

DEFINITIONS OF BURNOUT

Burnout is a combination of physical and psychological exhaustion, devaluation of sport, and a reduced sense of accomplishment (Lonsdale & Hodge, 2010). Burnout is defined as the "psychological, emotional, and sometimes physical withdrawal from sporting activity formerly perceived as enjoyable, as a consequence of chronic stress." (Allen, 2006). According to Joshua D. Allen, burnout in athletes has shown to be unique for every athlete and burnout can vary among people of different sports, age, as well as demographics. Furthermore, Allen describes factors of burnout being related to "boredom... pressure from coaches and parents, unfulfilled personal performance expectations, personality traits, experience of competitive stress, level of confidence in athletic abilities, and perceptions of social support (Allen, 2006)."

Another study indicated that overtraining and burnout have characteristics in common including impaired performance, fatigue, exhaustion, and mood disturbance (Lemyre, Hall, & Roberts, 2007).

Burnout has also been explained as an excessive requirement of energy, strength, and resources which lead to exhaustion (Hughes, 2014). In

MARK SHEARMAN

The supporting leg must be straight when contacting the ground.

addition, (Gould and Whitley, 2009) define burnout as "a physical, emotional, and social withdrawal from a formerly enjoyable sport activity. This withdrawal is characterized by emotional and physical exhaustion, reduced sense of accomplishments, and sport devaluation. Moreover, burnout occurs as a result of chronic stress and motivational orientations and changes in the athlete".

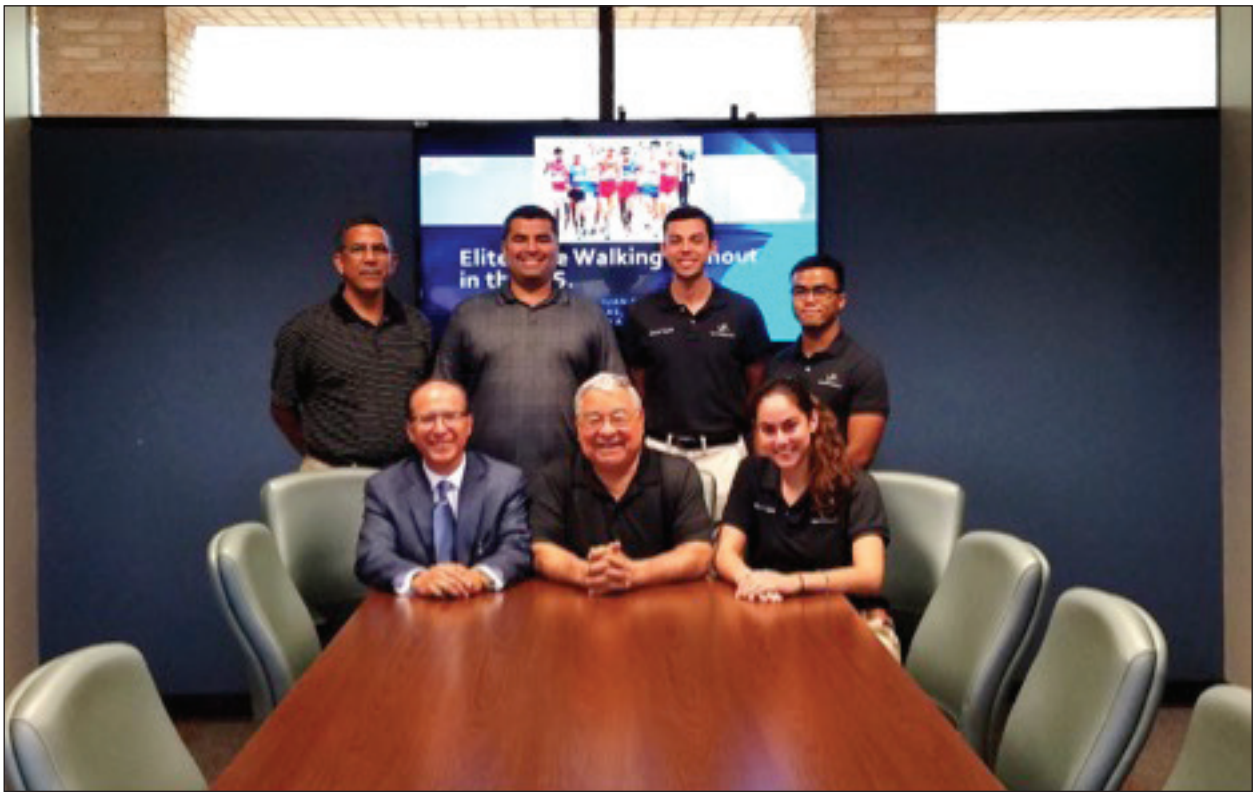
Four major domains are present in both definitions. Physical and psychological/emotional exhaustion, reduced sense of accomplishment, and the loss of value for the sport. All of these are current definitions of burnout from existing research that can be applied to the sport of race walking.

FACTORS OF PSYCHOLOGICAL BURNOUT IN RACE WALKING

Psychological factors have been considered to be a major cause of burnout in former competitive elite-level race walkers. There are several psychological factors that former race walking participants may have experienced during their participation in the sport. In previous studies on athlete burnout, some of the focused factors include motivation, passion, self-confidence, environment, performance, negative feelings, and coaching (Gufstafson, 2010).

For this particular study, the factors success, accomplishment, fatigue, apathy, awareness, appreciation, and lack of marketing were derived from the exploratory factor analysis that was conducted during this study's statistical analysis.

For this study, **success** is defined as "a psychological state resulting from perception of goal attainment, when the outcome can be attributed to desirable personal qualities (e.g., ability and effort)" (Salili, 1988).



Authors of this study.

Accomplishment is defined as "subjective term for personal achievement" (Elliot, 2005). **Fatigue** is defined as "a psychobiological state caused by prolonged periods of demanding cognitive activity and characterized by subjective feelings of 'tiredness' and 'lack of energy'" (Marcora, 2009). **Apathy** is defined as "a disorder of motivation and operationalized as diminished goal-oriented behavior and cognition" (Starkstein, 2008). **Awareness** is defined as "self-reports indicating that the observer consciously sees a stimulus" (Merikle, 2013). **Appreciation** is defined as "a matter of whether individuals are able cognitively to recognize and acknowledge that certain facts that pertain to them really do apply to them" (Charland, 1998). **Lack of Marketing** is defined as "the means and mechanism for behavioral change using marketing concepts and practice which acknowledges that behaviors are embedded in the individual, consumer, and societal level behavioral change occurs through mass adoption of individual level behavior" (Dann, 2010). Each of the mentioned factors could solely be the cause of psychological burnout in a race walking athlete, but it is also entirelly possible that a *combination* of factors could lead to psychological burnout as well.

METHODS

Participant Recruitment and Protocol: The first step for recruitment was to email and attain letters of support from A.C. Jaime, a former USA Track & Field (USATF) South Texas Association Executive Board member and race walking coach, as well as other U.S. race walking coaches he is affiliated with for this research investigation. The sample size was 40 former/retired U.S. female and male elite-level race walkers.

The letters of support attached to this application granted permission to the coaches to email an online consent form to their former/retired race walking athletes. To clarify, the online consent form was made by the researchers, but the online consent forms were sent to the athletes by their former coaches. This form indicated participation agreement to the following Qualtrics anonymous survey.

Once the online consent forms were filled, the next step was to email a Qualtrics survey link to the race walking athletes to complete the survey. The survey took an estimated time of 10 minutes to complete. Survey responses were de-identified through Qualtrics and

Elite Race-Walkers Rotated Component Matrix[a]

	Component(Factors)						
	1	2	3	4	5	6	7
Q7	.770						
Q8		.654					
Q9		.663					
Q12		.692					
Q14		.767					
Q15	.776						
Q17	-.797						
Q18		.722					
Q20	-.750						
Q24							.807
Q26						-.798	
Q28						.826	
Q29					.809		
Q30							.548
Q32					.727		
Q33			.821				
Q34			.900				
Q35			.858				
Q37				.847			
Q38				.835			
Q39				.898			

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations.

Within-Subjects Factors Measure: MEASURE_1	
Factors	**Dependent Variable**
1	Success
2	Accomplishment
3	Depleted
4	Indifferent
5	Awareness
6	Appreciated
7	Lack of Marketing

Factors were transferred into common matrix and common calibrations and performed a profile analysis of the participating elite race-walkers.

transferred to Human Performance Lab computer for quantitative and qualitative data analyses. The majority of the Qualtrics online survey responses incorporated a Likert scale and a couple of questions were multiple choice. All email contact and data analyses were strictly conducted within the Health and Physical Education Building II Human Performance Lab Room 141 computer, and the data was only made accessible to the research team and faculty advisor.

When analyzing the survey responses, the questions of the survey were categorized into nine sections: demographics, motivation, passion, self confidence, environment, performance, negative feelings, and coaching. The data collected from the survey responses was analyzed qualitatively and quantitatively. Survey responses provided descriptive data which was analyzed statistically in order to indicate possible causes of burnout.

Pairwise Comparisons **Measure: MEASURE_1**

(I) Factor	(J) Factor	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Differenceb	
					Lower Bound	Upper Bound
(1)Success	2	.124	.097	1.000	-.189	.438
	3	-1.316*	.216	.000	-2.014	-.617
	4	-1.316*	.202	.000	-1.969	-.662
	5	-1.576*	.195	.000	-2.206	-.945
	6	-.587*	.157	.012	-1.096	-.078
	7	-2.099*	.149	.000	-2.581	-1.617
(2)Accomplishment	1	-.124	.097	1.000	-.438	.189
	3	-1.440*	.217	.000	-2.143	-.738
	4	-1.440*	.190	.000	-2.054	-.826
	5	-1.700*	.187	.000	-2.304	-1.096
	6	-.712*	.151	.001	-1.200	-.224
	7	-2.223*	.140	.000	-2.675	-1.771
(3)Depleted	1	1.316*	.216	.000	.617	2.014
	2	1.440*	.217	.000	.738	2.143
	4	1.009E-013	.213	1.000	-.687	.687
	5	-.260	.181	1.000	-.845	.326
	6	.729*	.203	.018	.072	1.385
	7	-.783*	.188	.003	-1.390	-.176
(4)Indifferent	1	1.316*	.202	.000	.662	1.969
	2	1.440*	.190	.000	.826	2.054
	3	-1.009E-013	.213	1.000	-.687	.687
	5	-.260	.200	1.000	-.906	.387
	6	.729*	.217	.035	.028	1.429
	7	-.783*	.213	.014	-1.471	-.095
(5)Awareness	1	1.576*	.195	.000	.945	2.206
	2	1.700*	.187	.000	1.096	2.304
	3	.260	.181	1.000	-.326	.845
	4	.260	.200	1.000	-.387	.906
	6	.988*	.194	.000	.362	1.615
	7	-.523	.181	.126	-1.108	.061
(6)Appreciated	1	.587*	.157	.012	.078	1.096
	2	.712*	.151	.001	.224	1.200
	3	-.729*	.203	.018	-1.385	-.072
	4	-.729*	.217	.035	-1.429	-.028
	5	-.988*	.194	.000	-1.615	-.362
	7	-1.512*	.163	.000	-2.040	-.983
(7)Lack of Marketing	1	2.099*	.149	.000	1.617	2.581
	2	2.223*	.140	.000	1.771	2.675
	3	.783*	.188	.003	.176	1.390
	4	.783*	.213	.014	.095	1.471
	5	.523	.181	.126	-.061	1.108
	6	1.512*	.163	.000	.983	2.040

Based on estimated marginal means

*. The mean difference is significant at the .05 level. b. Adjustment for multiple comparisons: Bonferroni.

RESULTS

In order to understand the causation of psychological factors of burnout in former/retired U.S. female and male elite-level race walkers a 40-question survey was uploaded and made accessible through Qualtrics to better understand the common underlying phenomenon dimensions responsible for elite-level race walkers leaving the sport. The 40-question survey contained eight demographic style questions to assist in sorting out non-elite level race walkers as well as the use of IP addresses through Qualtrics to sort out non-U.S. athletes. One hundred seventy six subjects responded to personal invitations via email to participate in the Qualtrics survey and were eliminated for incomplete surveys. From the 96 participants who completed the survey, 17 were eliminated for non-elite status. Seventy-nine elite athletes completed the entire survey but four were eliminated for being non-U.S. athletes, leaving 75 eligible participants.

Seventy-five subjects responded to the 32 items designed to assess the underlying phenomenon dimensions responsible for elite-level race walkers leaving the sport of race walking in the U.S. These 32 items utilized a five-point Likert scale response format. The underlying dimensions being measured/observed were derived through exploratory factor analysis with an Eigen value set at 1.00 using Varimax with Kaiser Normalization rotation. Seven factors were retained with 75.99% of the total variance accounted for explained by the seven factors. Eleven items were deleted from the initial item pool because they did not load on any of the seven factors or they cross-loaded on two or more factors.

The results from the profile analysis indicate statistical significance and efficacy based on the Partial Eta Squared using the Lower-bound being 49% of the total variance which explains the differences among the seven factors. When comparing the mean difference among the different trials different relationships appear at the .05 level.

Trial 1 indicated no significant mean difference among Success and Accomplishment while a significant difference is present among Success and the rest (Depleted, Indifferent, Awareness “Ridiculed/Proud”, Appreciated/Supported, & Lack of Marketing).

Trial 2 indicated no significant mean difference among Accomplishment and Success while a significant difference is present among Accomplishment and the rest (Depleted, Indifferent, Awareness “Ridiculed/Proud”, Appreciated/Supported, & Lack of Marketing).

Trial 3 indicated no significant mean difference among Depleted and Indifferent or Awareness “Ridiculed/Proud” while a significant difference is present among Depleted and the rest (Success, Accomplishment, Appreciated/Supported, & Lack of Marketing).

Trial 4 indicated no significant mean difference among Indifferent and Depleted or Awareness “Ridiculed/Proud” while a significant difference is present among Indifferent and the rest (Success, Accomplishment, Appreciated/Supported, & Lack of Marketing).

Trial 5 indicated no significant mean difference among Awareness “Ridiculed/Proud” and Depleted or Indifferent while a significant difference is present among Depleted and the rest (Success, Accomplishment, Appreciated/Supported, & Lack of Marketing).

Trial 6 indicated a significant mean difference among Appreciated/Supported and the rest (Success, Accomplishment, Depleted, Indifferent, Awareness “Ridiculed/Proud”, & Lack of Marketing).

Trial 7 indicated a significant mean difference among Lack of Marketing and the rest (Success, Accomplishment, Depleted, Indifferent, Awareness “Ridiculed/Proud”, & Appreciated/Supported).

Factors 5 (Awareness “Ridiculed/Proud”) & 7 (Lack of Marketing) scored the highest means among all seven indicating having the most impact on participants while factors 1 (Success) & 2 (Accomplishment) have the least impact.

The common underlying phenomenon dimensions responsible for elite-level race walkers leaving the sport are factor 5 (Awareness “Ridiculed/Proud”) & 7 (Lack of Marketing).

DISCUSSION

The limitations of this study will help clarify the absolute need of continuing research on elite-level race walking burnout. A limitation of this study is the sample size that was achieved. It is recommended that any follow-up studies ensure that there is a more sufficient sample size to provide more reliable statistical results. Another limitation would be the non-validated survey. Due to the limited elite-level race walking research that is currently accessible, and due to the timeline of this study, a non-validated survey was

completed in order to complete this study in a timely manner.

THE COMMON UNDERLYING FACTORS IN THIS RESEARCH INVESTIGATION NARROWED DOWN TO "AWARENESS" AND "LACK OF MARKETING"

It should be noted that non-validated surveys are occasionally referenced in current research and that their credibility is useful for continuous studies of this research topic to reference (Kotecha, 2016; Tibbling 1982). This principal study used a non-validated survey that consisted of validated questions from referenced athlete burnout questionnaires and relevant questions to identify psychological factors of burnout (Altahayneh, 2003; Hughes, 2014; Staff, 2012).

It is recommended that follow-up studies try to validate this study's survey in order to further validate research findings. Furthermore, for future research it is important to ask the participants if they have received mental training or any type of sport psychology services. Mental preparation, sport psychology and mental training can help an athlete be mentally stronger. Not having sport psychology services or mental training might not allow them to perform at their full potential.

CONCLUSION

Based on the profile analysis, the common underlying factors in this research investigation narrowed down to "Awareness" and "Lack of Marketing" in U.S. race walking. This represents crucial components to the declining state of elite-level race walking as well as the most significant impact of burnout in former/retired female and male elite-level race walkers in the U.S. The results of this project will assist in identifying influential factors of burnout, hence improving the future of the sport in the U.S. The continuation of research on elite-level race walking burnout is imperative for the growth of the sport and the well-being of these athletes.

SURVEY QUESTIONNAIRE

1. Please select your gender.
   a. Male
   b. Female

2. At what age did you first participate in race walking?
   a. Younger than 10
   b. 10-13
   c. 13-16
   d. 16-18
   e. 18+

3. At what age did you retire from competitive race walking?
   a. Younger than 18
   b. 18-21
   c. 22-25
   d. 26-30
   e. 30+

4. When did you retire?
   a. 2010-2015
   b. 2004-2009
   c. 1998-2003
   d. 1992-1997
   e. 1986-1991

5. Please mark any of the following events that you ever participated in:
   a. Junior Olympic 1500 Meter Championship
   b. Junior Olympic 3000 Meter Championship
   c. Junior Olympic 5000 Meter Championship
   d. NAIA National 3K Championship
   e. NAIA National 5K Championship
   f. USATF National Outdoor 10000 Meter Championship
   g. USATF National Outdoor 20K Championship
   h. USATF National Indoor 3K Championship
   i. USATF National 5K Championship
   j. USATF National 10K Championship
   k. USATF National 20K Championship
   l. USATF National 50K Championship
   m. Pan American Cup
   n. Olympic Trials
   o. World Cup
   p. Olympic Games

6. Please mark any of the following events that you have ever placed in the top 3:
   a. Junior Olympic 1500 Meter Championship
   b. Junior Olympic 3000 Meter Championship
   c. Junior Olympic 5000 Meter Championship
   d. NAIA National 3K Championship
   e. NAIA National 5K Championship
   f. USATF National Outdoor 10000 Meter Championship
   g. USATF National Outdoor 20K Championship
   h. USATF National Indoor 3K Championship
   i. USATF National 5K Championship
   j. USATF National 10K Championship
   k. USATF National 20K Championship
   l. USATF National 50K Championship
   m. Pan American Cup
   n. Olympic Trials
   o. World Cup
   p. Olympic Games

7. I have accomplished many worthwhile things in race walking (as cited in Altahayneh, 96).
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. I don't know

8. I enjoyed overcoming obstacles in racewalking.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. I don't know

9. I enjoyed achieving the goals that were given to me, while participating in racewalking.
   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. I don't know

10. I was more competitive in race walking than other daily activities.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

11. I took competition much more seriously when compared to an opponent or to a standard.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

12. My desire for success was higher than my fear for failure.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

13. The effort I had spent in race walking would've been better spent doing other things (as cited in Altahayneh, 96).
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

14. Did you feel passionate about race walking throughout your career?
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

15. I was a successful race walker
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

16. My participation in race-walking enhanced my self-image.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

17. I thought of myself as a failure in race-walking.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

18. I felt prideful during my race walking participation.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

19. I performed up to my maximum capability in race walking (as cited in Altahayneh, 96).
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

20. It seemed no matter what I did, I didn't perform as well as I could (as cited in Altahayneh, 96).
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

21. I had difficulties in race walking due to financial issues.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

22. I had difficulties with personal relationships while in race walking.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

23. I felt lonely while participating and training in race walking.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

24. Was the sport of race walking well-marketed in the U.S. during your time of competition?
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

25. Do you think that race-walking is well-marketed today in the U.S.?
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

26. My peers didn't really care about how I performed in race-walking.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

27. My family supported my participation in race walking.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

28. After competition, I received proper feedback from others.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

29. I have experienced ridicule/mockery for my participation in race walking.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

30. I felt as though I was treated as an athlete and not as a complete person. (as cited in Altahayneh, 48).
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

31. I had negative thoughts towards race walking
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

32. I feel embarrassed about being a participant in race walking.
    a. Strongly Agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree
    f. I don't know

33. I have felt so tired from training that I had trouble finding energy to do other things during training season
    a. Strongly Agree

b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree
f. I don't know

34. I have felt physically worn-out out from the demands of the race walking
a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree
f. I don't know

35. I have felt mentally worn-out out from the demands of race walking
a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree
f. I don't know

36. What were your thoughts and feelings towards race walking when you decided to end training and participation?
a. Overwhelmed
b. Withdrawn
c. Embarrassed
d. Grateful
e. Satisfied
f. Accomplished

37. Do you think that the U.S. Olympic Team Trials Qualifying standard time for the Men's 20K race walk time of 1:36:00 should have been lowered?
a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree
f. I don't know

38. Do you think that the U.S. Olympic Team Trials Qualifying standard time for the Men's 50K race walk of 5:15:00 should have been lowered?
a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree
f. I don't know

39. Do you think that the U.S. Olympic Team Trials Qualifying standard time for the Women's 20K race walk time of 1:48:00 should be lowered?
a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree
f. I don't know

40. Do you see the sport of race walking improving in the future for the U.S.?
a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree
f. I don't know

41. Ultimately, why did you retire from race walking? [Mark all that apply]
a. Low motivation
b. Low passion
c. Poor self-confidence
d. Poor performance
e. Poor environment
f. Too many negative feelings
g. Poor coaching
h. I simply felt it was my time to leave the sport

REFERENCES

Altahayneh, Z. L. (2003). The Effects of Coaches' Behaviors and Burnout on the Satisfaction and Burnout of Athletes. Retrieved from https://fsu.digital.flvc.org/islandora/object/fsu:168048/datastream/PDF/view.

Coakley, J. (1992). Burnout Among Adolescent Athletes: A personal Failure Or Social Problem? *Sociology of Sport Journal.* 9, 271-285. Retrieved From http://journals.humankinetics.com/AcuCustom/Sitename/Documents/DocumentItem/9575.pdf

Charland, L. C. (1998). Appreciation and Emotion: Theoretical Reflections on the MacArthur Treatment Competence Study. *Kennedy Institute of Ethics Journal*8(4), 359-376. The Johns Hopkins University Press. Retrieved January 27, 2017, from Project MUSE database.

Dann, S. (2010). Redefining Social Sarketing with Contemporary Commercial Marketing Definitions. *Journal of Business Research, 63*(2), 147-153. doi:10.1016/j.jbusres.2009.02.013

Durand-Bush, N., & Salmela, J. (2010). The Development and Maintenance of Expert Athletic Performance: Perceptions of World and Olympic Champions *Journal of Applied Sport Psychology,* 14(3), 154-171. doi:10.1080/10413200290103473

Gould, D. & Whitley M.A. (2015). Various Factors Cause Burnout in College Athletes: A summary of the article "Sources and Consequences of Athletic Burnout Among College Athletes." *Journal of Intercollegiate Sport,* 1(1). Retrieved from http://www.humankinetics.com/news-and-excerpts/news and-excerpts/various-factors-cause-burnout-among-college-athletes

Gould, D., Dieffenbach, K., & Moffett, A. (2010). Psychological Characteristics and Their Development in Olympic Champions. *Journal of Applied Sport Psychology,* 14(3), 172-204. doi:10.1080/10413200290103482

Greenleaf, C., Gould, D., & Dieffenbach, K. (2010). Factors Influencing Olympic Performance: Interviews with Atlanta and NAgano US Olympians. *Journal of Applied Sport Psychology,* 13(2), 154-184. :10.1080/104132001753149874

Gustafsson, H., Hassmén, P., & Podlog, L. (2010). Exploring the Relationship Between Hope and Burnout in Competitive Sport. *Journal of Sports Sciences,* 28(14), 1495-1504. doi:10.1080/02640414.2010.521943

Haglind, D. (2004). Coping with Success and Failure—A Qualitative Study on Athletes and Coaches in Track and Field. (Essay in *Sport Psychology* 41-60p.) School of Social and Health Sciences. Halmstad University.

B. Hanley, A. Bissas, & A. Drake. (2013). Kinematic Characteristics of Elite Men's 50km Race Walking, *European Journal of Sport Science. 13*(3). 272-279.

Hughes, P. B. (2014). Association Between Athlete Burnout and Athletic Injury (Doctoral dissertation, The University of North Carolina at Chapel Hill).

Jowett, S., & Cockerill, I. (2001). Olympic Medallists' Perspective of the Athlete Coach Relationship. *Psychology of Sport and Exercise,* 313-331. doi:10.1016/S1469-0292(02)00011-0

Kellmann, M., & Gunther, K. (n.d.). Changes in Stress and Recovery in Elite Rowers During Preparation for the Olympic Games. Retrieved September 14, 2015.

Kotecha, J. (2016). Patient Confidence and Quality of Life in Idiopathic Pulmonary Fibrosis and Sarcoidosis. *Sarcoidosis Vasculitis and Diffuse Lung Diseases, 33*(4), 341-348. Retrieved February 4, 2017.

Kjormo, O., & Halvari, H. (2002). Relation of Burnout with Lack of Time for Being with Significant Others, Role Conflict, Cohesion, and Self-confidence Among Norwegian Olympic Athletes' In *Perceptual & Motor Skills* (3rd ed., Vol.94). Ammons Scientific.

Lemyre, P., Hall, H., & Roberts, G. (2007). A Social Cognitive Approach to Burnout in Elite Athletes. *Scandinavian Journal of Medicine & Science in Sports,* 18(2), 221-234. doi:10.1111/j.1600-0838.2007.00671.x

Lemyre, P., Roberts, R., & Stray-Gundersen, J. (2007, August 2). Motivation, Overtraining, and Burnout: Can Self-determined Motivation Predict Overtraining and Burnout in Elite Athletes? Retrieved September 14, 2015.

Lonsdale, C., & Hodge, K. (2011). Temporal Burnout of Motivational Quality and Athlete Burnout in Elite Sport, *Medicine & Science in Sports & Exercise,* 43(5), 913-921.

Lonsdale, C., Hodge, K., & Rose, E. (2009). Athlete Burnout in Elite Sport: A Self Determination Perspective. , *Journal of Applied Sport Psychology,* 27(8), 758-795.

Merikle, P. M. (1984). Toward a Definition of Awareness. *Bulletin of the Psychonomic Society*, *22*(5), 449-450.

Pierre-Nicolas, L. , Roberts, G., & Stray-Gundersen, J. (2007). Motivation, Overtraining, and Burnout: Can Self-determined Motivation Predict Overtraining and Burnout in Elite Athletes [Abstract]. *European Journal of Sport Medicine,* 7(2), 115-126.

Salili, F., & Mak, P.H.T. (1988). Subjective Meaning of Success in High and Low Achievers. *International Journal of Intercultural Relations,* 12, 125-138.

Starkstein, S. E., & Leentjens, A. F. (2008). The Nosological Position of Apathy in Clinical Practice. *Journal of Neurology, Neurosurgery & Psychiatry*, *79*(10), 1088-1092.

Address correspondence to:
Juan Gonzalez, Ph.D., CSCS
Department of Health and Human Performance
College of Health Affairs
The University of Texas-Rio Grande Valley
1201 W. University Dr.
Edinburg, Texas 78541
(956) 665-2309
(956) 665-3502 (fax)
Email: juanito.gonzalez@utrgv.edu

A FRESH APPROACH TO SPRINT TRAINING

Are traditional sprint training methods flawed? British coach John Shepherd raises some valid arguments.
Adapted from *The Coach,* Issue #39, Winter 2007

BY JOHN SHEPHERD

Recently it has been suggested that the "slow to fast" methodology of training a sprint athlete is flawed. After all coach and athlete may spend all the training year getting the latter into peak speed capability in August only to make them "slower" from October to June (assuming a single periodized year). Why not, goes the short-to-long or fast-to-faster approach, maintain as much of this speed at the end of the training year as possible and build more of it onto this, ready for speedier performances the next? Coaches such as Charlie Francis (see box), were at the forefront of such a shift in thinking. This approach emphasizes sprint speed all year round and builds more specific speed on more specific speed. This is seen to:

1. Maximize speed development physically
2. Optimally stimulate the central nervous system (CNS)
3. Reduce injuries—very often athletes pick up injuries, particularly to the hamstrings, when attempting to sprint after months of much slower work
4. Allow for more speed peaks
5. Minimize the negative effects of detraining fast-twitch muscle fiber

The short-to-long/fast-to-faster approach to sprint training can be seen to reflect the undulating periodization theory of training planning (UP)—of which more later.

HOW MUCH OF AN AEROBIC BASE DOES A SPRINT ATHLETE REALLY NEED?

Aerobic fitness underpins the development of most other types of fitness. The more efficient an athlete's body is at processing oxygen the quicker he/she will be able to recover between efforts. In the past it was reasoned that developing good aerobic condition in a sprint athlete would boost speed development. Thus it was not unknown for sprinters to go on 20-40 minute runs at the beginning of the training year.

The logic of this approach however, is somewhat derailed when one considers the actual aerobic/anaerobic content of the sprint events. For example the 200m is at best 5% aerobic and 95% anaerobic. Most of the work done by these athletes is anaerobic. Too much of an emphasis on aerobic work will blunt speed. This results from an unnecessary increase in the oxygen processing capabilities of slow-twitch muscle fiber and a "blunting" of the speed and power generation capabilities

Table 1: Sprint speeds as a percentage of maximum speed

Name of speed	Description and comment	Typical workout
Tempo runs	75-85% of max speed, run over 100-300m (Francis recommended weekly distances of 2000-2400m)	6 x 200m at 75% effort concentrating on form. 5 minutes recovery between runs
Speed endurance—long sprints	Sprints designed to improve the sprinter's ability to maintain flat out speed. This type of training is very intense and should be used with caution, due to its stress on the CNS. Regeneration of the athlete is be paramount	2 x 120m 100% sprints—full recovery 2 x 250m 100% efforts—full recovery
95% effort speed	These runs are performed just below flat out. They will groove in flawless technique without overstressing the athlete and in particular their CNS	3 x 120m with 7 minutes recovery between runs
Out and out speed—short	These runs are performed at 100% effort; they are intense and will stress the CNS	2 x 4 x 40m sprints from block start—full recovery between runs
Overspeed	These runs are performed at 105% of top speed using downhill methods or bungees to achieve this. High level of CNS strain	4 x 30m downhill runs with full recovery

of type II a and type II b fast-twitch fiber muscle fiber (1&2).

In contrast prolonged training with a specific speed emphasis will change fiber type in the direction you want for increased speed. Sprint athletes obviously require a proliferation of fast-twitch fibers and the short-to-long approach never loses sight of this. It will maximize the opportunity for changing fiber type to express speed—a top class sprinter's leg muscles will posses 70-80% of fast-twitch fibers.

SO HOW MUCH AEROBIC TRAINING IS NECESSARY IN A SPEED/SPRINT TRAINING PROGRAM?

Charlie Francis recommended that for training the mature 100/200 and 400m runner the development of base fitness, with an aerobic element requiring relatively little attention. He advocated only a short 6-week period where this conditioning element is given any kind of ascendancy at the beginning of the training year. Training immature athletes (0-4 years of consistent sprint training) will require a greater aerobic conditioning emphasis and Francis identifies an 8-12 week development phase at the beginning of the training year for them. Both these durations should allow sufficient time to plan a double or even a triple periodization sprint program, using much more specific training (of which more later). In terms of building a base of sprint running fitness tempo running is recommended (again, of which more later).

MAINTAINING SPEED IN-SEASON FOR SPEED ATHLETES

Undulating periodization offers the sprinter and coach probably the most effective way to maximize the manifestation of speed. UP basically mixes and matches all the relevant training ingredients needed to condition the sprinter together. Strength, power, agility, endurance, speed, technique work and flexibility are all carefully overlapped and fused together to keep and develop the sprinter's speed. This requires careful and consistent athlete appraisal on the part of the coach (this is something that Francis emphasizes with his sprint training) to ensure that the athlete does not become overtrained or injured.

Particular attention is placed on the effects training may be having on the sprinter's central nervous system. In the light of this it is crucial that coaches realize that no two athletes will have exactly the same training needs and that a one size fits all approach will not work. Individualized training programs will need to be produced (although this may be difficult for coaches working with numerous athletes).

INTENSITY NOT VOLUME IS THE KEY TO IMPROVED SPRINT PERFORMANCE

Although nearly all athletes increase the volume of their training as they progress year to year, for sprint athletes it is the training variable intensity that must have the ascendancy. Intensity should increase with a potential reduction in volume. Sprinting faster and faster over the athlete's competitive lifetime is the obvious goal. The coach needs to carefully monitor the volume of intense work being performed by

Table 2: Developing speed endurance using the short-to0-long approach. Adapted from Dintiman, *Sports Speed* (3rd edition) page 151/152

Week 1	Workout	Routine and distance	Repetitions	Rest interval
1	1	Jog 15 yd., stride 15 yd (75% speed)., jog 15yd, walk 15 yd.	5	No rest between reps; the 15 yd walk acts as the recovery phase
2	3	Jog 20 yd, stride 20 yd (90% speed), jog 20 yd, walk 20 yd.	5	As above
3	9	Jog 25 yd, stride 25, sprint 25 yd, walk 25 yd.	7	As above
4	11	Sprint 20 yd, jog 20 yd, sprint 20 yd, walk 20 yd.	7	As above
5	14	Sprint 20 yd 300 yd sprint Run on the spot to exhaustion	10 1 2	Walk 10-30 sec. 3-4 min. 1 min.
6	15	Sprint 40 yd 300 yd sprint Distance hop to exhaustion	8 2 1 each leg	Walk 10-30 sec. 2-3 min. 1 min.
7	19	Sprint 20 yd, jog 20 yd, sprint 20 yd, walk 20 yd. 300 yd sprint	15 3	Walk is the recovery phase 2.5 min.
8	21	440 yd sprint	4	4-5 min.

the athlete and the recovery that is needed to allow progression and reduce injury. The short-to-long approach allows the athlete to never be too far away from absolute sprint condition at any time in the training year.

This is why for sprint athletes, double and even triple periodization is possible. The latter would allow a sprint athlete to peak for the indoor season, mid-outdoor season and late-outdoor season for Olympic or World Championships, for example.

Note: Each peak should elicit a higher level of performance than the previous one—the long-to-short approach is seen to fail to provide a real opportunity to achieve 2/3 optimum speed peaks. This is because it is argued that too much time will be lost returning to previous speed levels rather than, building new superior ones. An exacting sprint coach will, for example, attempt to blend all the ingredients of perfect sprint performance into the third peak, for example, start reaction, acceleration, absolute speed, speed endurance, strength and power.

THE IMPORTANCE OF POWER

Power is crucial for the sprinter; the short-to-long method keeps power on the boil throughout the conditioning program. Francis, for example, ensured that complementary training takes place at all time. For example, he advocated maximum strength work in the gym during tempo running phases and even workouts. He would not combine flat out sprint work with near maximum weight lifting, due to the contraindications of the two training methods and the strain this could place on the central nervous system.

Interestingly Francis did not advocate a weight training "channeling" phase. This would normally use sport-specific weight training exercises, performed with increasing speed, such as strep up drives and single leg squats, to "deliver" the strength gained from more general weight exercises, such as the squat into sprint performance. Rather he saw sprinting itself as the ultimate "channeler" (plus plyometrics).

SPRINT SPEEDS AS CONDITIONING INGREDIENTS

In order to develop optimum sprinters coaches need to carefully blend sprint *speeds.* In terms of absolute speed it's recommended that running intensities never fall below 75% of maximum speed. Speeds slower than this will not have a sufficiently strong stimulatory effect on fast-twitch muscle fiber. Many coaches fail to divide up, in terms of their effects, the percentages of speed that can be generated between 75 and 105% of maximum speed (105% refers to the speed that can be generated through the use of overspeed techniques, such as downhill running and the use of bungees. Various terms have been

applied to sprint running speeds, such as tempo runs, speed endurance, lactate endurance maximum speed runs and so on. Table 1 defines the key types.

SPEED ENDURANCE TRAINING

I have devoted a small section to the development of speed endurance as this speed type is crucial the long sprints.

The short-to-long approach has a rationale for developing speed endurance—some of the types of sprint sessions have been outlined in Table 1. How much of an emphasis the coach places on this will be dependent on the training maturity of the athlete, the time of the training and competitive year and the specific peaking requirements of the sprinter and whether he/she is a 100,200 or 400m specialist.

George Dintiman has been one of the world's leading speed training experts. He devised an 8-week speed endurance regimen. I have provided some sample workouts from this program (Table 2) so that you can see how it is in keeping with the short-to-long theory of speed development. It will appear very different to many of the speed endurance programs that many coaches use. You'll see, or rather you won't see sets of 200m efforts as a starter, although longer reps do appear toward the end of the program. Note: the use of short distances to achieve the speed to run faster over the longer distances is at the end of the program.

Charlie Francis—sprint guru or sprint devil?

Charlie Francis coached the then fastest man in the world Ben Johnson to the world record and Olympic title in Seoul in 1988. Johnson as we know was subsequently stripped of this and other titles for failing a drugs test for anabolic steroids. Francis had his "methods'; let's put aside those of a more dubious nature, and consider his sprint training techniques/methods. It would be erroneous for us to assume that his athletes won only because they were drug fuelled (weren't others?). Perhaps we are also being hypocritical to see Francis as a pariah, when one considers the State sponsored doping of Eastern Bloc athletes in the period in which Francis was developing his coaching experience and methods. I believe that the Francis sprint training methods did add that "something extra" to the performances of those he coached, notably the short-to-long approach. Among his sprint athlete accomplishments was the fact that at the 1984 Olympics of the 14 Canadian medals, eight were won by Francis-coached athletes. Not surprisingly, his techniques and thoughts are still worth considering today.

CONCLUSIONS

The short-to-long approach never loses sight of the need to move at maximum speed. It is totally focused on developing this quality. It strips out all the intensities and exercises and energy pathway training that are seen to be detrimental to achieving this goal. And crucially, it is very carefully constructed to allow the athlete and crucially his CNS to optimally adapt.

REFERENCES

Sports Med. 2001;31(15):1063-82
Sports Med. 1990 Dec;10(6):365-89
Dintimen G—*Sports Speed* (third edition) Human Kinetics 2002
Francis C - The Charlie Francis Training System 1991 (e-book) available from CharlieFrancis.com

From the Editor

Continued from page 6970

Honestly, I never race walked myself. As a Long Island kid, I watched as some of the guys I raced against opted for the walk. I never paid much attention to what they did or how they did it.

When I became a coach I quickly found out that there was a lot to learn about track & field. I wore the cover off Doherty's *Omnibook*. But there was no walk info in there. Somewhere I came across how the East Germans hammered their walkers with physical fitness. Their walkers looked like moving fire hydrants. Muscular, squat, relentless and successful.

Once the technique was established we emphasized the fitness angle. We did circuit training like madmen. I set the goal for the walkers to be the most physically fit members of the team. They dragged old car tires up and down the football field. Dig the heel and pull. It paid off.

SPEED-POWER

It might seem odd to strive for development like this for an endurance event, but not if you view the walk as a speed-power event.

Speed and power events are traditionally explosive efforts of short duration—the jumps, sprints and throws. While there might not be the pure power in the walk there certainly is the speed, speed-endurance. Granted that may seem to be an odd statement to make but not if you consider how fast the walker's legs move.

The fastest people in track & field in terms of strides per second are the 100m sprinters. Those athletes have a turnover rate approaching five strides per second which translates to close to 300 strides per minute. A walker who can walk a six-minute mile has a stride rate pattern of around 260 strides per minute. In fact the walkers who can break 1:20 for a 20K have a greater leg turnover in terms of strides per minute than a 20-flat 200m sprinter. Unbelievable, right?

One must remember we are discussing strides per minute. Granted the sprinters are moving with a greater velocity due to their longer stride length. For a walker a longer stride results in "lifting," a technique violation and grounds for disqualification. For a walker to improve he must improve his stride frequency, like the challenge facing the short hurdlers.

And therein lies the problem. Since most coaches see the walk as an aerobic endurance event they train to develop aerobic qualities with their talent pool of "slow" distance runners. If one does not have the ability for a quick leg turnover it could lead to 55 years of nothing.

Years ago, I had a telling conversation with a racewalk parent/coach of a "national champion." When I asked what stride rate per minute they shot for he said he never considered that. I explained the import of the stride frequency in the walk. He reiterated that his son was a "national champion." I don't think he saw my point.

It seems the guy who interrupted me during my walk presentation felt I "didn't know anything about the walk." Maybe. It makes for a funny story now. And if he was right, at least we have that in common. Fifty-five years and counting.

USATF COACHING EDUCATION

LEVEL 1—CALENDAR OF SCHOOLS

The Level 1 course is the cornerstone of the USATF Coaching Education Program. It establishes a common ground amongst coaches by developing a language specific to the track and field coaching community. The program covers all events in a straightforward manner by emphasizing fundamentals, rules, safety/risk management, and instruction techniques. Click the link below to access registration information for each school.

http://www.usatf.org/Resources-for---/Coaches/Coaching-Education/Calendar-of-Schools.aspx

Date	Location
May 20-21	Allen High School - Dallas, TX
May 27-28	Cerritos College - Norwalk, CA
June 2-4	Atlantic Sports Health - Morristown, NJ
June 3-4	National Training Center – Clermont, FL
June 3-4	Houston Baptist University - Houston, TX
June 10-11	Benedictine University - Lisle, IL
June 17-18	Wellesley College - Wellesley, MA
June 18-20	UNC Greensboro - Greensboro, NC
June 19-20	Stillwater High School - Stillwater, MN
June 24-25	Broken Arrow High School – Broken Arrow, OK
July 7-9	University of Albany - Albany, NY
July 7-9	East Tennessee State University - Johnson City, TN
July 14-16	Nassau Community College - Garden City, NY
July 21-23	Johns Hopkins University - Baltimore, MD
July 21-23	Savannah State University - Savannah, GA
Aug. 4-6	Bishop Gorman High School - Las Vegas, NV
Aug. 4-6	Yale University - New Haven, CT
Aug. 5-6	Central College - Pella, IA
Aug. 11-13	Providence Day School - Charlotte, NC
Aug. 12-13	Highline College - Des Moines, WA
Sept. 29-Oct. 1	Community College of Philadelphia - Philadelphia, PA
Oct. 13-15	Marian University - Indianapolis, IN
Nov. 4-5	Nazareth College - Rochester, NY
Nov. 11-12	Cardinal Stritch University - Milwaukee, WI
Nov. 17-19	Eastern Michigan University - Ypsilanti, MI
Nov. 18-19	Tennessee State University - Nashville, TN
Nov. 18-19	Wellesley College - Wellesley, MA
Nov. 25-26	Residence Inn KC Airport - Kansas City, MO
Nov. 25-26	UNLV - Las Vegas, NV
Dec. 1-3	IMG Academy - Bradenton, FL
Dec. 8-10	Westerville South High School - Westerville, OH
Dec. 9-10	Houston Baptist University - Houston, TX
Dec. 15-17	Public School 9 - New York, NY
Dec. 16-17	Allen High School - Dallas, TX

APPLICATIONS AVAILABLE FOR 2017 LEVEL 2 SCHOOL

Applications for the July 17-22, 2017 Level 2 School at Cal State Fullerton are now being accepted. Coaches can earn USATF Level 2 certification in Endurance, Sprints, Jumps, Youth, Combined or Throws events during the intense, week-long program. The program provides an advanced, in-depth education in one event group and teaches the science behind the sport through advanced sport science concepts and training principles. The Level 2 Program is guaranteed to challenge and advance your knowledge of the sport.

Applicants are encouraged to apply early as enrollment is limited by event group. For more information on Level 2 certification and eligibility requirements click the link below.

http://www.usatf.org/Resources-for---/Coaches/Coaching-Education/-groups-coaches-education-level2-asp.aspx

CROSS COUNTRY SPECIALIST COURSE RETURNS JUNE 16-17, VILLANOVA UNIVERSITY, PA

USATF Coaching Education offers a 12-hour course featuring technical classes, laboratory training sessions, cross country specialty drills, periodization training for the cross country season, team building strategies, and long term athlete development for the endurance runner. Legend and world-class distance coach, Dr. Joe Vigil, has developed the content for the course along with veteran distance coach and coach educator, Scott Christensen. Don't miss this great opportunity to learn from these lead instructors! Coaches will participate in interactive discussion sessions in addition to the classroom and laboratory time.

Each coach completing the class will be awarded a USATF Cross Country Specialist Certificate. All coaches are eligible. There are no prerequisites, but there is a limited capacity for the course. Registrants will be accepted on a first-come, first-served basis.

Click the link below for more information; registration will open soon.

https://www.usatf.org/Resources-for---/Coaches/Coaching-Education/Special-Programs/2017/Cross-Country-Specialist-Course.aspx

USATF CAMPUS OFFERS ONLINE PROFESSIONAL DEVELOPMENT

The online learning platform available to all coaches, athletes, and educators with an interest in better understanding human performance. Users can access valuable information about the sport of track and field to use towards certifications or continuing education hours; any combination of two courses is eligible for one CEU in partnership with Indiana University.

What does USATF Campus offer?

- Access to courses for athletes and coaches which are applicable to all sports; plus specialized track and field courses
- Professional development which is affordable and convenient
- Evidence based information from leading sport scientists and coaches
- Training tips, and words of wisdom from Legend Coaches

Current Courses Available:

Basic Principles of Endurance Training (2 hrs.): A course by Legend Coach, Dr. Joe Vigil provides the philosophy and winning strategies of a world class endurance coach who has produced American record holders, and Olympic Medalists, while educating the average weekend runner and scholastic coach all over the world. Included are Dr. Vigil's sample training programs.

Sport Science College:

Under the direction of Dr. Christine Brooks, well known USATF Coaching Education sport science director and accomplished exercise physiologist and training theory expert, two courses exploring the science of the human performance in sport are currently available. More courses are coming soon!

Physiological Development Through the Athlete's Lifespan (3hrs): This course examines the physiological concepts as they apply to an athlete's development. Topics included are the multidimensional nature of coaching, the motor performance abilities relevant in most sports, the impact of growth and development, the gene versus practice controversy, and brief overview of the body structure throughout the athlete's sport development. Basic principles that a coach must know to understand the individuality of training.

Energy Systems and Motor Performance Abilities in Athletes (3hrs): This course presents a relevant understanding of the athlete's development and essential physiology concepts. It explains in coaching language where energy comes from and how it is used in performance. "What every coach must understand in order to write a training program!"

Training Science (3hrs): In this course you are introduced to the fundamentals of training science. This knowledge underlies your ability to design the type of training that will most effectively improve an athlete's

performance. Essential concepts such as homeostasis, core training principles, magnitude and timing of the training stimulus, periodization theory, tapering, load quantification and designing the annual training plan are all discussed.

Acute Fatigue Due to Training and Competition (3hrs): Fatigue is something we all experience. It is characterized by tiredness and the want for rest. Whether the athlete likes it or not, fatigue serves a protective function. It is both cognitive and physical in nature. In this course, you are introduced to the science of acute fatigue due to training and competition. With rest, acute fatigue dissipates and the body becomes stronger. You will learn about important fatigue theories, and the factors believed to contribute to fatigue such as low fuel supplies, acidity and body temperature.

Sport Specific Strength and Power (3hrs): In this course, we discuss the science of sport specific strength and power development, and training theory concepts as they pertain to the development of strength and power.

All courses are available at: http://courses.usatf.org/

REMINDER RENEW USATF COACHES REGISTRY STATUS FOR 2017

Coaches are reminded to renew their status on the USATF Coaches Registry to maintain eligibility for obtaining a credential at USATF Indoor and Outdoor Championships and select USATF Coaching Education Programs, including the Level 2 School, coaching enhancement grants and the Emerging Elite Coaches Clinic. Please verify your status on the USATF Coaches Registry by accessing the published list.
http://www.usatf.org/Resources-for---/Coaches/Coaches-Registry/Coaches-Registry.aspx

A summary of registered coach requirements and steps is listed below. **Do not delay renewal or submission of the required background screen, as processing may take up to two weeks. No applications for the Coaches Registry will be processed during the credentialing process at USATF Championship meets.**

1. Be a current USATF member
2. Pass the USATF background screen
3. Complete USOC SafeSport course
4. Accept and adhere to the SafeSport Handbook
5. List current coaching affiliation in the application process

Click the link below to begin the USATF Coaches Registry application process.

http://www.usatf.org/Resources-for---/Coaches/Coaches-Registry/Registered-Coaches-Program.aspx

TRACK & FIELD NEWS

www.trackandfieldnews.com

SERVING THE TRACK & FIELD

COMMUNITY SINCE 1948

TRACK & FIELD NEWS

With subscribers in more than 60 countries, T&FN is the standard of accuracy and completeness for reporting of U.S. and worldwide track and field athletics. Published monthly. Call 1-800-GET-TRAK (1-800-438-8725) to subscribe. T&FN now offers three subscription options—Digital, Print, and Print + Digital. Subscribers get free eTrack (quick results by email).

TRACK COACH

The official technical quarterly of USA Track & Field, *Track Coach* (formerly *Track Technique*) has been the sport's major technical publication since 1960. TC became a digital-only publication in January 2015.

TOURS

Popular sports tours since 1952. Write for information about tours to the Olympics, Olympic Trials, World Championships, etc.

TRACK & FIELD NEWS
2570 W. El Camino Real • Suite 220 • Mountain View, CA 94022 • USA
Phone (650) 948-8188 • Fax (650) 948-9445
http://www.trackanddfieldnews.com • email: subs@trackandfieldnews.com

USATF.ORG