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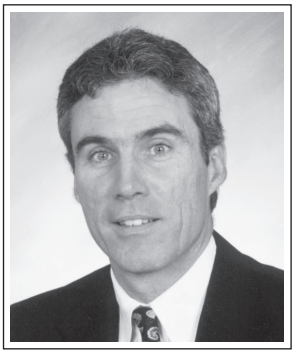
FROM THE EDITOR

RUSS EBBETS



THE EVOLUTION OF PROGRESS

Years ago I was director for a race called The Bijou Mile. It was one of those straight-shot mile runs, when a road mile was a novel idea. The course had a gentle downhill, we ran the race at night and videotaped the finish. Remember, once upon a time video was a novel technology too.

The Bijou Mile was a midsummer tune-up for New York's Empire State Games. We drew the top milers from as much as 300 miles away for a chance to charge down the gentle downhill chasing the possibility of a lifetime PR. Eventually, we became a qualifier for New York City's 5th Avenue Mile. Our representatives always did well down in the Big Apple, especially our high schoolers and master runners.

When I was younger I did lots of road race management, over 150 races. Anyone who has been "in charge" can sympathize with the million and one details that swirl around your head as you strive to get everyone to the starting line on time. It seems even one's problems have problems, not the least of which was traffic control.

At the Bijou Mile there were 12 road intersections. The three big ones were handled by the police with squad cars and flashing lights. The smaller streets were manned by a crew of 25 Saratoga Stryders with a red flag and a raised palm. A stray dog chasing the runners could make for a funny story; a stray car, not so much.

Over the last decade one of the solutions race directors have turned to to solve the traffic control problem is to adopt loop-type courses. With a loop course the runners pass a common start/finish point each mile or kilometer. Traffic marshals can serve their purpose several times as opposed to many marshals with a scant few moments of work. An added benefit is that the spectators get to see the progression of the race as it moves towards its conclusion. It also makes it more difficult for the Rosie Ruiz's of the world to "participate" or at the very least easily validate their participation.

The centralization of race logistics makes sense on several levels. Aid stations, water stations and police support can all be reduced making events more profitable, safer for participants and enhancing the spectator experience. The loop method has been widely used all the way up to the Olympic Trials Marathon for both the men and women. More recently it has been adopted for fall cross country racing.

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MARAUDER CHAMPIONSHIP SPRINT HURDLING

Thorson, who is University of Mary's former director of track & field and cross country, now has time for a comprehensive review of training for the sprint hurdles, collegiate level and above. Many drills and sample training sessions are included.

BY MIKE THORSON, ASSISTANT COACH (HURDLES)
AT THE UNIVERSITY OF MARY, BISMARCK, NORTH DAKOTA.

OVERVIEW/INTRODUCTION

The short hurdle races (100m hurdles for women and 110m hurdles for men) are a rhythmic sprint over ten equally-spaced barriers that requires speed, power and technical efficiency. The women's 100m hurdle race consists of ten hurdles set at 33" in height. The distance to the first hurdle is 13m and the distance between hurdles 8.5m, with a run-in after the last hurdle of 10.5m. The men's 110m hurdles consists of ten hurdles set at 42" and the distance to the first hurdle is 13.72m (45 feet). The distance between hurdles is 9.14m (30 feet), with the run-in distance 14.02m.

This article will attempt to provide coaches with a concise, practical, user-friendly guide to training at a higher level and ultimately performing better in the sprint hurdles. Our goal is to present the technical aspects and necessary training in a comprehensive, yet practical application that all coaches and athletes can employ to improve their performances.

HURDLING 101— COACHING THE SPRINT HURDLES

THE BASICS . . . Start and Approach to the First Hurdle

*A smooth, explosive start and maximum acceleration to the first hurdle is the goal to attain the fastest possible rhythm and optimal time between the hurdles.

*A majority of men will use the 8-step approach, with the lead leg in the back block. Some of the elite men's hurdlers will use a 7-step approach, producing the obvious advantage of enhanced momentum development and the reduction of strides that the hurdler is taking in the race.

*Most women will employ eight strides to the first hurdle. Although there are women who use seven, the standard thinking is eight shorter strides from the blocks will permit greater acceleration than seven longer strides. The 8-step hurdler is more likely to carry a quicker rhythm over the hurdles because the hurdler has one more stride than the seven-step hurdler to exert force.

*The start of the race should be attacked with a push for the first 4-5 strides that one would see in normal sprint acceleration. The last 3-4 strides should see a more upright body position to prepare for the first hurdle clearance. Looking up too soon and popping up too quickly should be avoided. Men though will have to basically be "fully upright" to avoid hitting the hurdle.

*The goal of the hurdler is to create the greatest amount of force to the track in the shortest amount of time (called impulse). Athletes should be reminded to think of "pushing" as in "pushing up a hill," applying force downward to push to vertical. Often athletes will "reach" instead of applying downward force.

*A hurdler who competes in other sprint events should use the same block settings in those events as he/she uses for the lead leg/trail leg in the hurdles.

***Breathing Model**: The breath should be held as you go up in to the set position in the blocks and a quick breath blown out (exhale) at hurdles 1-3-5-7-9. Elite hurdlers will likely use a 1-4-7-10 model of breathing. The reasoning is an athlete can produce more force when actively holding his breath. (Valsalva maneuver). Sustained maximum motor firing can only be maintained for approximately 2 ½ seconds and athletes who can master the breathing model will be at a distinct advantage.

*The goal to the first hurdle is to generate velocity through the barrier and to increase the stride frequency for the succeeding hurdles. A fast time to the first hurdle, as many athletes and coaches think, does not always set the hurdler up for optimal success in the succeeding hurdles.

THE GOAL OF THE HURDLER IS TO CREATE THE GREATEST AMOUNT OF FORCE TO THE TRACK IN THE SHORTEST AMOUNT OF TIME (CALLED IMPULSE).

Lead Leg

*The quicker the lead leg the quicker the touchdown is the common thinking. The hurdler must attack the hurdle with high knee action generated from the hip flexor muscles.

* A flexed lead leg opposed to straight leg, leading with the knee with a cocked foot (dorsi-flexion) should be emphasized (pull the toe up).Leading with the hip and pointed toe is slower and often causes a straight lead leg.

*The lead arm should be in line with the lead leg knee—"don't reach."

*Emphasize sprint mechanics and posture. (Posture needs to be trained—it doesn't just happen.)

*The lead leg should be in the back block, unless you are 7-stepper to the first hurdle.

*If the body lean is insufficient, especially in men, the hurdler will land on the heel, causing a braking action.

*The lead leg initiates and controls to a great extent the hurdle clearance.

Hurdle Clearance

*Clearance is the key—clearance is relative to performance. The more time spent in the "air" means less time on the ground producing force.

*The distance that the athlete takes off from the hurdle at takeoff is the most important factor in clearance height. The takeoff distance affects the angle of travel and nothing can be changed once the athlete leaves the surface.

- The angle of travel determines distance in landing and is the determining factor in touchdown.

- Distance in landing affects speed to the next hurdle and timing to takeoff. If too far—you sail. If hurdler is too close—you vault.

- **Recommended takeoff and touchdown distance ranges:**

  Men Takeoff: 2.0-2.2.2m
  Women Takeoff: 1.95-2.10m
  Men Touchdown: 1.15-1.30m
  Women Touchdown: .80-1.0m

*The parabolic curve should be as flat as possible over the hurdle and is determined at takeoff.

*Hurdling is a continuous action. Any deceleration or hesitation in the layout clearance is a detriment. Many hurdlers "freeze frame" or stall during the clearance on top of the hurdle. Continuous arm swing and an active trail leg are very, very important.

*__All sprinting is controlled by the arms.__ Research shows the arms precede the legs in sprinting. Even though the hurdler never reaches maximum speed, the hurdles are a sprint event stressing the arm mechanics in not only the acceleration phase, but in creating velocity through the hurdles. Coaches should always cue athletes to use the arms more vigorously, to create more "arm speed."

*The shoulders/hips should be square to the hurdle as the athlete attacks the barrier. "Square up to the hurdle" is an often-heard coaching cue.

*The hurdler attacks the hurdle with the lead arm driving in front of the chest (not across the midline of the chest) at shoulder level. Men often bring the arm somewhat higher than women, looking right under the arm at eye level.

*It is critically important that the men's hurdlers "run tall," or "drive tall." The hips and chest have to be up and "tall" in order for men to have a smooth clearance of the 42" hurdles.

Trail Leg

*The plantar flexors of the trail leg must be allowed to complete the drive, with full extension of the trail leg joint at takeoff. The hip circle continues through the thigh crossing parallel to the barrier. Pulling the trail leg through its complete action is critically important.

*As the active trail leg comes forward, the opposite reaction is produced with the backward swing of the lead arm. These actions must be equal in order for the shoulders to stay square with the hurdle, with the lead arm going down and the around the trail leg to counteract the leg mass.

*The trail leg knee should come through the armpit and fully reload to the front high knee position. This is critical for men. Women can often "get away with" not fully reloading the front high knee.

*The three strides between the hurdles are shorter than normal sprint strides. The first stride off the hurdle is the shortest, with the second the longest and the follow up stride shorter due to the upcoming hurdle.

IT IS CRITICALLY IMPORTANT THAT THE MEN'S HURDLERS "RUN TALL," OR "DRIVE TALL."

Trail Arm

*The primary purpose of the trail arm is to maintain balance on landing. Many women carry the trail arm too wide and high and this results in undesirable off-balance rotation upon landing. Male hurdlers are forced to perfect this aspect of hurdling due to hurdle height. Excessive rotation off any of the hurdles causes problems for the follow-up hurdle.

*A quick pull through of the trail arm is desirable. A long stroke of the trail arm is typically a slow stroke, with the arms/hands too far behind the body.

DIFFERENCES BETWEEN MEN AND WOMEN

It is a serious mistake to treat the men's and women's hurdles the same. They are significantly different. Speed is the most important component of the women's hurdles. Although it is also very important for men, technique is just as important in producing quality times. Many of the top women's hurdlers are not technically sound. Some are actually quite poor but excel due to their speed and the lower hurdle heights. Men don't have that luxury. Men must maintain a much higher center of gravity, the lean is much more pronounced, and the trail leg brought through much higher, through the armpit, to name just a few of the obvious technical differences between men and women. The very best men's hurdlers certainly have great speed, but they must be very good technically as well.

TRAINING GUIDELINES/ PRINCIPLES—"HOW TO GET FASTER"

*Power, speed and sprint mechanics are the three most important ingredients in the hurdles. A large percentage of time must be devoted to developing power and speed!

*Speed development should be the primary focus for women. But velocity through the hurdle is critically important for both men and women.

*Focus on training that produces a FAST time. Drills are certainly important. But many coaches and athletes drill excessively. Training and drills that improve rhythm should be emphasized. Remember that **rhythm** is the type of speed which allows hurdlers to use their technique to the maximum. **A hurdler is only as fast as his technique allows!!**

*A great deal of time should be spent on training that develops the 3-step rhythm at race speeds or as close to race speeds as possible so

that the proper neurological motor patterns are firmly ingrained. Too many coaches drill and employ technique work at slow speeds to seek mastery of skills, only to have the athlete falter when they are asked to replicate the same thing at higher race speeds. Coaches and athletes should always remember that practice does not make perfect. It makes PERMANENT!!

*Our goal in training is to simulate and mimic what will take place in competition. There is, however, a 5-10% drop off in training compared to competition. So, how do we obtain this intensity in training?

1. **Reduced hurdle heights**: Women hurdling with 30-inch hurdles or lower. Men: Hurdling at 36" or 39". Most of the women's hurdling training is done with 30" inch hurdles. Men obviously do some work at the competition height of 42", but certainly not a large percentage. Miniature hurdles, scissor hurdles, speed hurdles and even cones can be used for reduced hurdle heights.

2. **Discounted hurdling spacing**: Women train at 8.0m (8.5m is standard) and men 29 feet (30 feet or 9.14m is standard). We do not change the start distance to hurdle one for either men or women. The discounted hurdle spacing will allow the athlete to simulate the speeds and rhythm that will be needed in the actual competition.

3. **Race the Sprinter**: Place the hurdlers in blocks right alongside sprinters in a competitive situation, with the hurdlers receiving an advantage and the sprinters starting from a 3-point or 4-point stance.

4. **Place hurdlers in competitive situations** for a bulk of your training where they have to compete head-to-head with teammates. It is very difficult to reach the desired speeds training solo and this should be avoided. ALTHOUGH THE BASICS NEED TO BE REHEARSED OVER AND OVER, THERE IS NO SUBSTITUTE FOR THE REAL THING. COMPETITIVE HURDLING IN TRAINING IS A MUST!!

HIGH INTENSITY WORK CAN DIRECT THE INTERMEDIATE FIBERS TO ASSUME FAST-TWITCH MUSCLE FIBER PROPERTIES. SPEED CAN BE TRAINED; IT IS A NEUROMUSCULAR SKILL.

*Rhythm training should be closely monitored and should be discontinued when fatigue becomes a factor.

*Speed development should be trained on a daily basis. High intensity work can direct the intermediate fibers to assume fast-twitch muscle fiber properties. Speed can be trained; it is a neuromuscular skill. Speed work ideally should be included in each and every training session. This is typically not possible due to the need for recovery days. But the goal is to stimulate the central nervous system (CNS) and activate the fast-twitch system on a very frequent basis.

*Train starts to first hurdle and use the touchdown time charts to check consistency. Many coaches do not work to the first hurdle nearly enough. The first hurdle sets the tone for the entire race! The touchdown time charts are very useful in analyzing training and can serve as a great motivational tool. Teammates and managers can assume this task if manpower is limited.

*Arm speed/drive is a component that many hurdlers lack and need to train. The use of hand/wrist weights weighing .75-1.5 pounds can be used to handicap/overload the hurdler. Remember, **the arms control sprinting**. Hand weights can also assist hurdlers who have problems with rotational/balance concerns due to arm mechanics. Some arm mechanics coaching cues: 1. Elbows bent at 45 degrees 2. Thumbs up and elbows closely turned in to the body 3. Shorten radius of arms—no sweeping! 4. "Speed up arms".

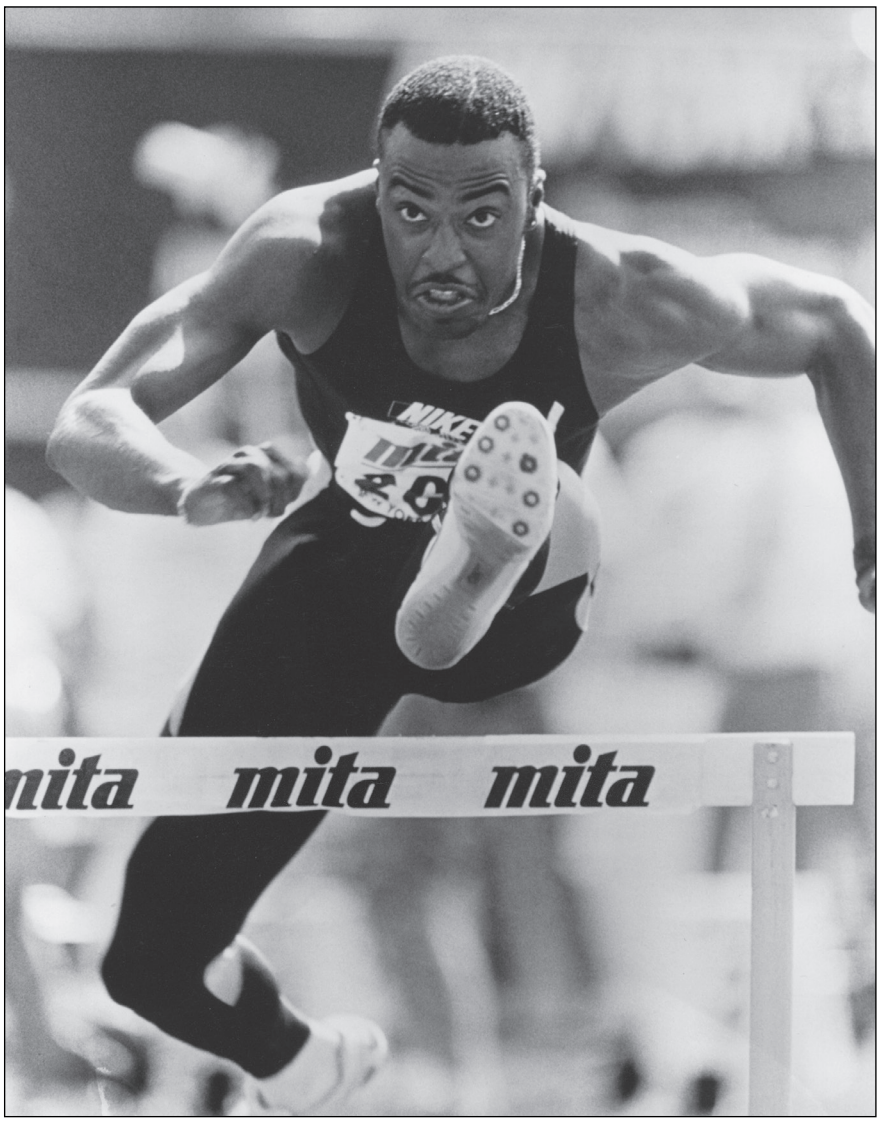
*Resistance Starts: Use cords, sleds, bike tires, harness, etc. Stress proper push pattern/sprint mechanics with the resistance. Remember the 10% rule. No more than 10% of the athlete's body weight should be used when providing overload for resistance work. Resistance is way too excessive in most cases. The athlete's time should not be slowed by more than10% as well.

*The use of video is an age-old coaching tool. A different twist: Have athletes and teammates video with their own cell phones and use that to analyze their own hurdling as well as others post practice/training session. Video can often cause an overanalysis of the athlete and should be used in inexplicit teaching situations. Another helpful aid is to have athletes demonstrate and model the different drills/technique.

*Raised cardboard, bubble wrap, chalk or athletic tape can be used to assist athletes in hitting the desired takeoff, touchdown marks and cut step. The coach should be careful however to not allow the athlete to look "down" and use it as a visual cue. The athlete must develop a "feel" for the mark.

*Emphasize that sprint posture/ mechanics must be done correctly at all times, including warmup when coaches can observe and make corrections and offer coaching cues. Many athletes suffer posture problems due to a weak core. Core strength should be emphasized in every hurdler's training. Poor posture is often times caused by a lack of focus and concentration. Accordingly, any exercise should be stopped when the technique is not sound.

*Bounding should be a part of the athlete's warmup and workout sessions to build the needed explosive power that a hurdler requires.



VICTOR SAILER/PHOTO RUN

Run tall. . . Drive tall.

MARAUDER HURDLE DRILLS DRILLS THAT WORK; DRILLS THAT PRODUCE RESULTS

1. Lead Leg/Trail Leg Drill Any number of hurdles set at very short spacing with drills done on the side of the hurdles at low heights. Athletes rehearse the lead and trail leg mechanics at different speeds ranging from walking to running at 75-80%. The drill can be done walking, marching, skipping or running. Another version of the lead leg/trail leg drill is to *march* through the hurdles with even shorter distances employing fast feet, fast arms, with an emphasis on the arm speed. The drill can be done with spikes, but preferably flats.

2. Arm Drills Any number of lower hurdles (30' or lower for women; 36" for men) can be used for this drill at reduced, discounted spacing (28 feet for men and 7.0 meters for women, although spacing is not critically important because the drill is done at slower controlled speeds). The drill is misnamed in that the athlete must hurdle at slower speeds (75-80%) **without** using the arms. There are three versions: 1) **Regular**—Athlete hurdles from a standing start any number of hurdles with the arms extended out in front of the body in a locked position. 2) **Fly**—Same as #1 except arms are extended like wings. 3) **Chest—** Same as 1 and 2 except arms are held tightly folded to the chest (Helpful if the athlete grabs shirt) Coaching cues: Emphasize leading with the knee, squaring up hips and shoulders to the hurdles and letting the body balance itself without the use of the arms. It is a great drill to

teach body awareness and balance to eliminate rotational problems. The arm drills are typically done in flats.

3. One-Step Hurdles From a standing start on the start line, hurdle any amount of hurdles spaced so that the hurdler has only one step to clear the hurdle. The first hurdle can be on the mark and others spaced at low heights 12- 13 back-to-back steps for both men and women. The drill teaches athletes to lead with the knee, flexed lead leg, projecting hips through the hurdle and getting down very quickly with an active trail leg. It is also useful to eliminate a "swinging" of the lead leg. The drill should be done in spikes at controlled speeds, with an emphasis on arm speed and projecting hips through the hurdle.

4. Tempo Hurdles Set(s) of any number of hurdles done in spikes with regular hurdle form with close to all-out intensity. Example: 5 Hurdles x 3 x 2. Athletes should be given ample recovery between reps and sets to assure that the correct motor patterns are trained. A good rule of thumb is 3-3 ½ minutes per rep and 4-4 ½ minutes per set. Typically we don't use more than 5-6 hurdles in this drill due to the fatigue factor. Often only 3-4 are used.

The first hurdle is on the standard mark with the following discounted hurdles of 7.5-7.7m for women and 8.53m. (28 Feet) for men. Spacing can be modified to assure that the athlete is simulating the desired competition stride frequency. Hurdle heights can vary (we even alternate heights) but are typically lower, especially for men. Heights can also vary between sets. Tempo hurdles are done as a preliminary drill leading up to actual hurdling from blocks and should be done in *spikes* from a 4-point or 3-point start. (We typically use a 4-point stance simulating their normal block start)

Sample Off-Season Training Week

Monday: am-Hurdle Technique pm- Speed Endurance 2 Interval Training, Strength Training

Tuesday: Recovery—(Circuit Training, Speed Circuits, Med Ball Training, Elliptical, Stationary Bike)

Wednesday: am-Hurdle Technique pm-Speed Endurance 1 Interval Training, Strength Training

Thursday: Recovery—(Circuit Training, Speed Circuits, Med Ball Training, Muliti Jump Med Ball Training, Elliptical, Stationary Bike) Strength Training

Friday: Hill work or Speed Endurance

Saturday: Rest

Sunday: 20 minutes Light on Elliptical or Stationary Bike

Actual Training Week-Josh Lamers-Week 31 April 9-15

Note: Actual Training week for Josh Lamers, who ran 13.85 to place second in the 110m Hurdles at the 2018 NCAA Division II Outdoor Championships

Monday, April 9—Hurdle Technique followed by 1 x 250m w/spikes @ 95-98%, 12 minutes recovery, 1 x 200m w/spikes @ 95-98%, Strength Training

Tuesday, April 10—Stationary Bike 15 minutes, Warmup, Accels w/spikes, Orange Med Ball Circuit (15 Throws)

Wednesday, April 11—Hurdle Technique followed by 3 x 150m w/spikes @ 95% 6 minutes recovery, Strength Training

Thursday, April 12—Warmup, Recovery Circuit, Accels w/spikes

Friday, April 13—Pre-Meet Hurdle Technique Warmup

Saturday, April 14—Meet @ NDSU in Fargo ND

Sunday, April 15—20 minutes Elliptical (Recovery)

5. Shuttle Hurdles Athlete hurdles one lane of barriers in one direction and turns around and returns in another lane of hurdles, doing a series of loops/reps. The hurdles can be set at any height, although lower heights would typically be used as less energy and force is required for the lower heights in a drill that can be very demanding. The drill should be done in spikes with sets of different recovery times, depending on the objective. It is obviously a great drill for the intermediate hurdler in terms of teaching alternating legs, making adjustments (steering) and simulating the demands of the 400 hurdle race in terms of fatigue/energy systems. It teaches the athlete to hurdle in a fatigued state.

6. Lead Leg/Trail Leg Wall Attack Drill With a low hurdle against wall, fall forward into wall and attack with the lead leg, stressing a flexed lead leg with a cocked foot and leading with the knee. The opposite arm also drives into the wall. Another version of this drill is to take one step and then fall forward into wall. The hurdle can be moved out too and trail legs can be done on the side of the hurdle. Another version is to place hands on wall and go back and forth in in a stationary position alternating the trail leg movement over the top of the hurdle The drill should be done in flats.

7. Race Endurance Simulation Drill Repeat hurdle reps from blocks with spikes using discounted hurdles and spacing and very little recovery. The hurdler jogs back and goes immediately from blocks again.

The recommendation is to use 6-7 hurdles. A breakdown in speed and mechanics on the second rep will indicate too many hurdles are being used. The drill is used to train speed maintenance in the closing stages of the race.

SPEED/SPEED ENDURANCE

There are those that argue that the short hurdles are not a sprint event. Be that as it may, one cannot argue that it is not a speed event. Nearly all elite men's and women's hurdler take the same number of strides in a race (51). So it is reasonable to assume that the hurdler with the greatest stride frequency should have the most success, providing power and technical efficiency are equal to the other competitors.

Speed endurance needs to be a component of all sprint hurdle training. Many hurdlers who perform very well indoors are not as good when the additional barriers are added outdoors and the speed endurance ingredient is lacking. Different combinations of hurdles and recovery time can certainly increase speed maintenance. But short hurdlers will need the different types of speed endurance training to be an elite hurdler and maintain the desired speeds over hurdles 6-10. The short hurdler needs to be able to run a quality 200/300m to be an elite 100/110m hurdler!

A brief explanation of the training that a sprint hurdler should utilize:

##SPEED Runs of 95-100% intensity over 30-60 meters or up to six seconds of running Example: 4 x 40m blasts with spikes from blocks @ 100% intensity with 5-6 minutes recovery per rep.

Actual Men's 110m Hurdle Technique Training Session

Monday, March 12 (Outdoors)

1. Marauder Warmup
2. Walking Arms 2 x 10m
3. Walking Lunge Backwards 2 x 10m
4. Accels 4 in flats
5. 1 Step Hurdles 5 Hurdles x 3 @ 36 inches
6. 1 x Flying 20 on turn (Time)
7. 40m Blast From Blocks (Time)
8. Tempo Hurdles 6 Hurdles x 2 @ 39" (From a 4-point start)
9. 4 Hurdles From Blocks with hand weights @ 39" x 1
10. 4 Hurdles From Blocks x 1 @ 36"
11. 7 Hurdles From Blocks x 2 @ 42" for the first hurdle and 39" for following 6 hurdles (Time)
12. 6 Hurdles from Blocks x 1 @ 42" for the first hurdle and 39" for the following 6 hurdles (Time)
13. 15 minutes Stationary Bike (Recovery)

    NOTE: Spikes for 5-12

Actual Women's 100m Hurdle Technique Session

Tuesday, March 20

1. Marauder Warmup
2. Sitting Stationary Arms 2 x 20 seconds
3. Cone Hops (Big—12 inch cone) with Eyes Closed 2 X 20 seconds
4. Accels 4 in spikes (Spikes worn through the remainder of the session)
5. Lead Leg/Trail Leg Drill 3 Hurdles 2 on each leg
6. Arm Drill 3 Hurdles x 2 with the Arms to the Chest
7. 1 x 30m Fly on turn (Time)
8. 1 x 30m From Blocks (Time)
9. Tempo Hurdles 4 Hurdles x 3 @ 30" From a 4-point start
10. 3 Hurdles From Blocks x 2 with hand weights 33"-30"-30"
11. 1 x Flying 20 on straight (Time)
12. 7 Hurdles From Blocks x 1 33" for first hurdle followed by 30" (Time)
13. 3 Hurdles From Blocks with hand weights x 1 @ 33"-30"-30"
14. 6 Hurdles From Blocks x 2 @ 30" (Time)
15. Warmdown—Jogging barefoot followed by foam roll and 10-15 minutes Stationary Bike

##SPEED ENDURANCE Runs of 95-100% of maximum over 60-150m or 7-20 seconds of running Example: 3 x 80m @ 95-100% from 4-point stance with 4-5 minutes rest, 10 minutes recovery followed by 1 x 150m with spikes @ 95% intensity.

##SPEED ENDURANCE 1 Runs of 95-100% of maximum over 150-300m or 20-40 seconds of running Example: 2 x 150m with spikes @ 95% intensity with 6 minutes recovery, 10 minutes recovery between set, 1 x 200m with spikes @ 95-100% intensity.

##SPEED ENDURANCE 2 Runs of 95-100% of maximum over 300-600m or 40 seconds of running or over. Example: 2 x 300m with spikes @ 95% intensity with 8 minutes recovery, 12 minutes recovery between set, 1 x 350m with spikes @ 95-100% intensity.

STRENGTH, WARMUP, SUPPLENESS

***STRENGTH** Without getting into specifics, the strength program chosen should emphasize functional strength: sport specific strength that the athlete can actually use. Most authorities will agree medium loads with a fast series of repetitions are typically what most hurdlers/sprinters need. There will be a need too for some heavy loads to train the power that is needed in the acceleration phase. If you are a coach that does not set up the training programs for your athletes, constant, daily communication with the strength coach is essential.

***WARMUP** There are many types of warmup programs that can be utilized. Most coaches acknowledge that a dynamic, continuous warmup is most suited for high performance training and competition. Regardless of what type of warmup is used, it must train flexibility, power, sprint mechanics, balance and strength in addition to serving to prepare the body for performance and prevent injury. Time must be devoted to mobility and assuring that the hurdler is very supple. The extreme range of motion that is required for an elite hurdler must be trained. The warmup should really be looked upon as a *speed improvement* tool in itself.

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EDITORIAL COLUMN

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If one mentions cross country and you're from the Eastern part of the United States Van Cortlandt Park eventually comes into the conversation. Virtually everyone who has run cross country has run at Van Cortlandt at one time or another. The all-time list for the high school 2.5 mile course is dotted with America's legendary high school talent. The course starts out flat, disappears into the back hills, emerges with about 800m to go and finishes on a long, straight flat trail. For a spectator you literally (and only) get to see the runners going and coming.

The college 5-mile course offers slightly greater viewing with the comings and goings of the 3-mile split on the main trail. Despite the limited viewing opportunities tradition trumps repetition and VCP remains a standard and staple of many high school and collegiate programs in the East.

It seems the loop idea has taken hold of the collegiate cross country scene. With loops measured to the meter, the advent of real-time split timing, the drama of the early pacers and the late charging chasers plays out to an essentially stationary audience as the runners loop and loop and loop. The unfolding race drama and excitement is only enhanced by the digital scoreboards on courses that have routinely become flat and fast. Unless there is weather.

Imagine for a second a trench 25 feet wide and 5 miles long and full of mud. Not a muddy puddle here or there but a mud bog, all mud. That was the "course" for a league championship I attended this fall on a grass four-loop course. The men ran second and the women had chewed up the course, literally, in their three-loop 6km. Without exaggeration, there was more mud on this course than on a mud run.

Is this what cross country has become? Progress is always a compromise between the future and the past. It's just that I have trouble justifying training all season for multiple conditions to be hit with something nobody trains for. The best people probably did what they were supposed to do but they didn't do it very well. Maybe I'm getting jaded, longing for "the good old days" and all that but I'd still prefer to see the runners run rather than splash, slip and slide.

SPORTS NUTRITIONIST JAMIE SHEAHAN TALKS WITH TRACK COACH EDITOR RUSS EBBETS (AUGUST 2018)

Jamie, what is your background and how did you get involved with athletic nutrition?

I am a registered dietitian at a health club and an adjunct professor of sports nutrition at the University of Vermont. I grew up playing team sports in high school and in college then transitioned to running marathons, so combining my passion for nutrition as well as athletics made sports nutrition a natural fit.

One of the problems I have always had with diet and nutrition advice is whatever one guru says is often soon contradicted by a second or third guru. Complicating this scenario is the fact that all three may have scientific research to back up their claims. How does one know who to listen to or follow?

It really comes down to delving into the science behind various recommendations. Nutrition is still a relatively new science, which means that many of our recommendations have changed even in the past few years. Recommendations should only be made based on studies that are well-designed and validated by previous or follow-up studies.

What do you see are some of the biggest challenges an athlete faces regarding diet and nutrition?

One of the biggest challenges is simply that it's an afterthought. Most athletes invest a tremendous amount of time and effort into their training, but they forget to factor in how their diet impacts the effectiveness of their training. I often equate this to mapping out a road trip, but forgetting to put gas in the tank of your vehicle. Without proper fueling, an athlete won't get to where they want to go, and for overscheduled and overtaxed athletes, nutrition tends to fall by the wayside.

Another significant challenge is that there is so much misinformation out there when it comes to what type of diet an athlete should be eating. Paleo, keto, high-carb, vegetarian, the list goes on and on and many famous athletes tout their dietary choices as the key to boosting performance. There are also endless products that entice athletes by offering a quick and easy way to gain muscle or boost speed, very few of which can deliver on such promises. Ultimately there is no one quick fix diet or product that can outperform a healthy, well-rounded diet that factors in an athlete's individual needs.

What exactly are RDA's (recommended daily allowances) everyone talks about? How are they determined? Would these numbers change if one is talking about a 14-year-old athlete, an Olympian or a sedentary individual?

RDA's are the amount of calorie and nutrient intakes considered adequate to meet the needs of healthy people. RDA's were established using research studies that identified the amount required to meet the needs of 97.5% of the population. However, these are not always applicable to athletes who are regularly engaging in high-volume and/or high-intensity activity, such as Olympic or professional athletes. These individuals should have individualized diet plans to account for the unique demands of their sport.

Where do processed foods fit into an athlete's diet?

To optimize health and performance an athlete's diet should consist of whole foods as much as possible. That being said, no one can or should be expected to eat perfectly all of the time, so athletes should strive to limit processed foods as much as possible. There are also times when processed foods can be preferable, for instance gels or gummies consumed during an endurance event.

What is the intestinal flora and why is it important?

The intestinal flora is the population of microorganisms living in the intestinal tract. It consists of over 1,000 different types of bacteria that play a role in digestion, our immune health, mental health and disease risk just to name a few. The composition of the intestinal microflora is determined by genetics, diet, lifestyle and medications.

Antibiotic therapy is one of medicine's go-to's. How does this therapy affect one's intestinal flora and what steps can be taken to rectify this problem?

Unfortunately, antibiotics are not discerning in the bacteria they kill off. This means that in addition to killing off the invading bacteria they are prescribed to get rid of, they also wipe out bacteria in the intestine that are good for us. This can leave us vulnerable to unwanted bacteria colonizing our digestive tract following antibiotic treatment. The best strategy to restore a healthy gut microflora is to take a probiotic supplement and eat probiotic-rich foods immediately following antibiotic therapy.

What are probiotics and why are they important?

Probiotics are the "good" strains of bacteria that populate the intestines.

Can one get probiotics from a daily diet or do they have to come from supplementation?

Probiotics can easily be obtained in one's daily diet from fermented foods such as yogurt, kim-chi, kefir, kombucha, sauerkraut and miso.

What are pre-biotics? And what is their function?

Pre-biotics are foods high in a certain type of fiber and serve as a source of food for probiotics. Just like any other living thing, probiotics need food to survive so including pre-biotic-rich foods in one's diet helps support a healthy gut microflora. Sources include dandelion greens, garlic, onions, asparagus, bananas, oats, barley and flax seeds.

It seems pretty easy to find RDA's for proteins, carbohydrates and fats but how can one sensibly translate those numbers into serving portions, especially for a coach talking to a 14-year-old?

MyPlate is a free resource that can translate recommendations for proteins, carbohydrates and fats into suggested servings for various food groups. It is not intended for high-level athletes, but it is a great starting point for those looking to consume an overall well-rounded diet.

It seems that good diet and nutrition seems as much about what you don't eat as much as it is about what you do eat. What are some foods or beverages that are on you "avoid list?"

I prefer to take the "everything in moderation" approach. Is a candy bar good for us? No, but it's unrealistic to say we are never going to eat one. That being said, the one thing I would encourage everyone to avoid is trans fats. Fortunately, all trans fats have been banned by US government and by July of 2019 there will be no artificial trans fats allowed on the market.

Vitamin supplementation is a book in itself. Are there any basic recommendations you have here?

Supplements are not regulated by the FDA so my number one recommendation when it comes to supplements is to ensure safety by

purchasing supplements that have been certified by US Pharmacopeia, NSF International or ConsumerLab.com. Individuals can and should obtain what they need nutritionally by eating a whole food diet, but if allergies or other food restrictions result in a deficiency then supplements can be beneficial. Just remember that more doesn't mean better when it comes to vitamins and minerals so mega-dosing with vitamins or minerals is *not* beneficial and in fact can be detrimental to one's health.

Why is fiber so important?

Fiber is important in normalizing bowel movements, lowering cholesterol, preventing colon cancer, regulating blood sugar and maintaining a healthy weight.

Track & field is divided into endurance type events (800m+), speed and power events (100m, jumps, throws) and hybrid events that combine both (heptathlon, decathlon). Would your recommendations change for the different disciplines?

Yes, these events place very different demands on the body physically, and thus nutritionally, so recommendations would need to be specific to each event.

What are your recommendations regarding pre-event meals? And does this change from the endurance events to the speed and power events? Are there any foods you would definitely include or definitely avoid?

The most important thing when it comes to a pre-event meal is to avoid complications. The wrong pre-event meal is more detrimental than the right one so trial and error is key. Meals prior to shorter duration events should differ from those consumed prior to endurance events. In general, athletes should avoid trying anything new prior to an event and avoid high fiber and high fat foods that can lead to gastrointestinal issues.

What about post-recovery meals? Is there a timing issue here? Any particular foods you inclined to recommend or are you more based on carbohydrate-protein rations?

The goal for recovery meals is to provide carbohydrate to resynthesize muscle glycogen and to provide protein to build and repair muscle. The sooner athletes are able to consume a recovery meal after activity the better because cell sensitivity and permeability is high and thus allow for optimal glycogen resynthesis and muscle repair. Recovery meals/snacks should consist of simple carbohydrates and protein in a ratio of 4:1 to 2:1.

While America's obesity crisis continues to spiral out of control weight gains for certain events can prove to be a benefit, especially in the throws. Do you have any recommendations here that promote lean muscle mass?

Certain events favor body types that contain a higher body weight and ideally this weight would be mostly in the form of lean muscle mass. Building lean muscle mass requires athletes to consume 400-500 additional calories per day and an additional 14 grams of protein per day combined with a periodized strength training routine.

Competition and team travel can lead to some less than desirable eating strategies from fast food diets to late night meals. Any thoughts here?

Sometimes you just have to make the best of a bad situation. While most fast food restaurants don't offer the healthiest fare, with some planning and sometimes creativity it's still possible to make reasonably healthy selections. When traveling, I recommend that coaches research area restaurants ahead of time and identify those with some healthy menu options.

Many nutritionists recommend not eating past 8PM but meet scheduling and time zone travel can disrupt this schedule particularly for athletes traveling west to east. Any strategies here that can keep one on schedule or must one simply "make do?"

For an athlete, it is far better to eat late than to not eat at all. Athletes should do their best to eat according to the time zone that they are in, which may mean relying more on small, frequent meals and snacks instead of larger meals that they may not be as hungry for when it doesn't line up with their usual routine.

I've seen it recommended that high-level athletes eat up to five meals a day. Is there any value in this? Do you have any suggestions on what one should eat at a particular time?

This strategy is usually preferred because higher-level athletes need to consume so many calories to keep up with the demands of their training that it can be very difficult to fit those into three meals.

What about eating during an event? Marathoners have gels and goop-type foods, but what about the heptathlete or decathlete, or even an Olympic pole vaulter whose competition can last 6+ hours. Any recommendations to maintain energy levels?

I would recommend that athletes who have competitions lasting longer than 5 or 6 hours consume foods with small amounts of fat and protein. Relying on gels or other fueling products typically used by marathoners will provide energy, but will not provide satiety, which can become an issue that impacts performance. It's hard to perform when your stomach is growling!

Dehydration can significantly decrease performance and even contribute to the different grades of heat injury. What hydration strategy do you subscribe to?

There is no one size fits all approach when it comes to hydration strategies. Hydration status is impacted by environmental factors like temperature and humidity as well as exertion level, clothing and individual sweat rates. The best way for athletes to evaluate their hydration status is to monitor their urine color and adjust intake accordingly.

Conversely, marathoners and ultra-marathoners are susceptible to hyponatremia, essentially water intoxication. How can this be prevented and what would be some of the signs and symptoms that it is occurring?

I have found this situation to be more and more common now that so many athletes are worried about dehydration. Many runners take it to the extreme by overdoing it on water intake during races and the consequences can be dangerous and even fatal. Signs and symptoms include dizziness, disorientation, headache, nausea, vomiting and a feeling of fullness in the stomach. Unfortunately, many athletes become too confused and disoriented to recognize these symptoms while they are occurring, which is why it's so important to have well-trained support crews and medical teams to help athletes who may be hyponatremic. The best way to prevent hyponatremia is to consume small amounts of water at a time and include electrolytes in beverages and/or in fueling products. This is especially important when racing in extremely hot conditions when one's sweat rate is higher than normal and thus sodium losses are high as well.

Electrolyte replacement drinks get plenty of hype and have become almost a staple of all sports participation from the "weekend warrior" to the most elite athletes. What makes for a "good" replacement drink, when should it be used and in what quantities? Is there any value in diluting a commercially prepared electrolyte drink?

More often than not electrolyte replacement drinks are not necessary. The average American consumes more than enough sodium in his/her diet making electrolyte beverages obsolete for those "weekend warriors" who are not exercising in extremely hot conditions or for extended periods of time. The other concern when it comes to these beverages is their high sugar content. Designed for endurance sports, these added sugars are not necessary for most recreational athletes and can contribute to weight gain in those not expending a large number of calories during their activity.

Motivated and dedicated athletes are usually the traits also seen in athletes with eating disorders. The basic training methods of track & field (high caloric expenditure and relentless training) lend itself to complicating these behaviors. What can a coach, parent or athlete do to insure an athlete stays on an "even keel" throughout a career?

The most important thing a coach can do is to avoid setting weight or body composition goals for their athletes. Putting too much emphasis on these measures may trigger disorder eating behaviors in athletes and result in a lifelong struggle that negatively impacts an athlete's performance and health. Coaches and parents can have a positive influence by encouraging athletes to see food as fuel for their body to perform and feel their best. Additionally, eating disorders often develop on a continuum, which means that coaches and parents should be watchful for warning signs so that they can intervene before the problem becomes a serious medical condition. Fear of gaining weight, distorted body image, preoccupation with food, self-imposed food restrictions, lack of flexibility with exercise and diet, avoiding eating in front of others and weight loss are all red flags that an athlete may be struggling with an eating disorder. It is important that coaches and parents refer the athlete to a doctor, registered dietitian and therapist to address the issue as soon as possible.

Athletic females present with a host of potential challenges with the monthly cycle and the

threat of early osteoporosis via the Female Triad. For the athletic woman what are some general recommendations to keep one's life healthy and balanced?

The hallmark feature of the Female Athlete Triad is a significant energy deficit. This may be due to restrictive eating and/or high energy expenditure from activity. As this energy deficit becomes long term, hormones are affected resulting in amenorrhea and loss of bone mineral density. Female athletes can prevent this by ensuring they are consuming enough calories to meet the demands of their training.

What role does iron supplementation play for both the male and female athlete? At what dose level?

Iron-deficiency anemia is more common in female athletes and can negatively impact performance as oxygen delivery to muscles is reduced. However, too much iron in the form of supplements can lead to oxidative damage, therefore supplementation should only be used when a deficiency has been established through testing. Dosage will vary and iron levels should be rechecked to determine if supplementation can be discontinued. Athletes can then focus on incorporating iron-rich foods to maintain normal iron levels.

What is the safest way to lose weight? And for keeping it off?

The safest way to lose weight is probably the most frustrating way; slowly. I regularly work with athletes and non-athletes attempting to lose weight and as much as I would like to whisper in their ear the secret to quick and lasting weight loss, no such miracle diet or pill exists. Any diet or pill that promises such things may deliver in the short term, but I can all but guarantee that any weight lost through drastic diets or cleanses will be regained in short order. Focusing on small, manageable dietary changes such as switching from creamer and sugar in one's morning coffee to just a splash of milk can pay dividends long-term. Athletes in particular have to be careful not to lose weight too rapidly as they will put themselves at risk for injury with a body that is underfueled and losing muscle tissue. 1-2 pounds of weight loss per week is the maximum amount of weight that I recommend athletes lose unless they are in the off-season. Keeping weight off means maintaining the dietary and lifestyle changes that allowed an individual to lose the weight in the first place. It can be hard to do so when the thrill of seeing the scale go down each week is no more so athletes should set new goals around behaviors to stay motivated.

Alcohol is a cellular dehydrator and from a health perspective alcohol makes little contribution to one's general health. What role does alcohol play in an athlete's life?

I categorize alcohol under the umbrella of "discretionary calories." An athlete has certain nutritional needs they must meet through their diet when it comes to quality carbohydrates, protein and healthy fats in order to optimize their performance. When these needs are met there are usually a couple of hundred calories that an athlete can consume that can just serve the purpose of supply calories and little else. For some this might be chips, candy, ice cream or the like. For others, alcohol is how they choose to spend these calories. However, if alcohol intake becomes too high and begins displacing nutrient-dense foods then it can become problematic. I run into this issue all of the time with college athletes who struggle to balance the demands of their sport with a desire to engage in normal social activities that typically involve alcohol consumption.

Gluten seems to be getting much press over the last few years. Exactly what is gluten, why can it be a problem and how does one know if a "gluten free" diet would benefit them?

Poor gluten has certainly seemed to have taken on the title of public enemy number one in recent years. Gluten is a family of proteins found in wheat, barley and rye that gives dough its elasticity and provides structure to baked products. For the vast majority of the population gluten is not problematic, however, more and more people are seeking out gluten-free products. While this is necessary for the small portion of the population (about 1%) with celiac disease—an auto-immune condition in which the immune system treats gluten as a foreign invader leading to damage of the gut wall, digestive issues and nutrient deficiencies—many without a celiac disease diagnosis claim they feel better when they eliminate gluten from their diet. There are individuals who test negative for celiac disease, but have what is called non-celiac gluten sensitivity. The number of people with this condition has not been established as there is no test to diagnose it. Studies show that most individuals who think they have non-celiac

gluten sensitivity have other causes for their symptoms. Studies have also shown that athletes without celiac disease do not experience an improvement in performance when following a gluten-free diet.

Caffeine is the most widely used drug worldwide. Countless studies have detailed its enhancing effect on performance, but how does a coach broach this issue with a highly motivated 14-year-old (or his/her parent) who is dead set on gaining a possible "advantage" with this additive? And when does enough caffeine become too much?

It's true that caffeine has been proven time and again to enhance performance. Although we can't say for certain, it seems that this "edge" can be attributed to a reduction in perceived exertion level. Coaches should emphasize with their athletes that caffeine and similar products that claim to boost performance are no replacement for training hard and eating a well-balanced diet. If athletes are determined to use caffeine to give themselves an advantage then it should be used in the proper dosage (3-6 mg/kg of body weight) and exceeding this dosage can have negative side effects like jitteriness, anxiety, headache, irritability and diarrhea. Athletes can even consume toxic doses by ingesting excess energy drinks or caffeine pills. Fortunately most products geared towards athletes like gels and gummies provide caffeine in very low doses (less than an average cup of coffee) and can be consumed safely.

Chronic low-grade inflammation in the body has been linked to everything from arthritis to diabetes to heart disease. It is well known that some foods contribute to inflammation in the body that can slow healing or delay recovery. What are your recommendations here?

The biggest offenders when it comes to pro-inflammatory foods are sugar, vegetable oils, refined grains and fried foods. Fortunately there are also plenty of foods that fight inflammation in the body too. Green leafy vegetables, blueberries, fatty fish, tart cherries and turmeric all work to fight inflammation in the body. For both overall health and performance, individuals should try to limit pro-inflammatory foods as much as possible and instead have a diet rich in fruits, vegetables, whole grains, lean proteins and healthy fats.

The side stitch can be one of those periodic problems that haunts the newer runner but it can also be the result of intestinal disturbances. What are your thoughts on prevention and treatment?

It can be difficult to say what the actual cause of a side stitch is as they can be brought on by everything from not allowing enough time to digest a meal before running to improper breathing. To avoid any nutrition-related side stitches, athletes should eat meals 2-3 hours prior to the start of their event or training session. That being said, everyone is different and I've worked with plenty of athletes with "iron guts" who could consume a cheeseburger and fries right before a 20-mile run with no issue (not that this would be recommended). Athletes should experiment during training to determine what foods are well tolerated and the ideal timing of these foods. Those with especially sensitive stomachs may want to consume liquid calories in the form of a sports drink prior to competition to avoid any issues.

If you had a crystal ball and you could see into the future, what are some of the challenges or innovations you expect to see in the next 3-5 years?

A challenge I currently see in the area of sports nutrition and nutrition in general and that will continue to be an issue in the years to come is information overload. It seems that everyday there is a new product, diet or nutrition philosophy that draws followers despite a lack of evidence supporting the health or performance outcomes. It can be hard for consumers to know who to trust and where they can get evidenced-based, unbiased information.

Jamie Sheahan was born and raised in Vermont. She graduated summa cum laude in 2011 from the University of Vermont with a Bachelor of Science degree in dietetics and then went on to complete her Master of Science degree in dietetics in 2013. An avid runner, Jamie has completed over 40 marathons and three ultramarathons. Jamie currently works as Director of Nutrition at The EDGE in South Burlington and serves as an adjunct professor teaching sports nutrition at the University of Vermont.

LACTIC ACID DOES NOT CAUSE MUSCLE SORENESS

Clearing up some misconceptions about the cause of muscle soreness.

BY KEN KASHUBARA, CSCS, USATF-1

The advent of information technology has caused a revolution in education. Tonight, today's students can read studies published this morning. Never before has the newest information been so available. High school students in AP classes, and collegiate student-athletes, know more than ever before.

Coaches need the athletes' trust and respect in order for coaches to help athletes reach their full potential. Students are going to class and learning that lactic acid is not the cause of muscular soreness. Lactic acid is not even the cause of the "burn." Students read the proof and study the facts for their tests. Then when they go to practice, and hear a coach talk about recovery runs "to flush lactic acid," the students may lose some respect for that coach. They may question the coach, thinking, "well if they think this, and it's wrong, what else are they wrong about?"

We coaches mostly refer to what we were taught. We were taught the best information available at the time. Even now, when completing an internet search, hundreds of articles on workouts, soreness and recovery provide faulty lactic acid information.

The purpose of this article is to help coaches relay recent scientific information to today's athletes in a way that they understand.

WHY WE WERE TAUGHT THAT LACTIC ACID WAS THE CAUSE

The onset of lactic acid as the culprit of soreness begins with the Krebs Cycle (aka Citric Acid Cycle), continues with the Cori Cycle (aka Lactic Acid Cycle), and ends with the Lactate Threshold. All three of these biological processes are real and valid scientific facts.

The Krebs Cycle is a series of chemical reactions that generates energy for all aerobic organisms (1). The intensity of energy demands determines the substrates for energy. Lower intensity processes use fats as a substrate. When movement

increases in difficulty, glucose is used as a faster energy source. Phospho-creatine is used as a substrate when the energy demand is immediate. No matter the energy demand, all substrates must convert into ATP (Adenine Triphosphate) to produce energy.

The Cori Cycle becomes significant in sport as energy demands increase. The human body needs constant energy fuels of ATP during exercise. When an exercise is aerobic (with oxygen), glucose is broken down into pyruvate, and feeds into the Krebs Cycle. When the exercise demands require anaerobic energy (without oxygen), glucose becomes pyruvate, and pyruvate is converted into lactate (2). Lactate is then taken by the bloodstream to the liver. In the liver, lactate is built back into pyruvate, which is built further into glucose.

CORI CYCLE CHART

The Lactate Threshold occurs when blood lactate begins to increase exponentially during anaerobic respiration. Early studies determined that blood lactate levels are elevated during high intensity exercise (3). Lactate is produced faster than the bloodstream can clear it from the muscles during high intensity exercise.

Given this information, early deduction was that since blood lactate (aka lactic acid) was elevated during high intensity exercise, it was the cause of the muscular burn. Furthermore, since high intensity exercise often results in muscular soreness, then lactic acid must be the cause.

This was the best conclusion available at the time. Unfortunately, it is not true.

CORI CYCLE

IN LIVER		IN MUSCLE
GLUCOGENESIS		GLYCOLYSIS
Glucose	→	Glucose
↑		↓
Pyruvate		Pyruvate
↑		↓
Lactate	←	Lactate

WHAT IS THE CAUSE OF THE BURN?

The breakdown of ATP for energy creates the release of hydrogen ions in the bloodstream. This process accelerates with higher intensity exercise, such as sprints and the kick at the end of mid- and long distance races. These hydrogen ions (H+ ion) are protons, and the cause of the "burn." They impair performance by inhibiting anaerobic ATP production, which hinders the muscle contractile process, and increases acidity of the blood, eventually leading to muscular failure.

Humans may vomit after an extreme bout of exercise. This occurs because the accumulation of H+ ions decrease the pH level of the blood, making it acidic. The already-acidic stomach acids reach an untenable level, and the body vomits in order to reduce the acidity of the body.

Athletes adapt to improve their fitness levels by increasing buffering ability of these hydrogen ions (4). Buffers resist pH change. The first line cellular buffers are proteins; secondary blood buffers include hemoglobin. Perhaps the best adaptation to prevent pH changes is ventilation. Increased oxygen intake, better cellular respiration, increased mitochondria counts, a higher anaerobic threshold, and increased VO_2 max all contribute to resisting pH changes during exercise.

HUMANS CAN GET SORE WITHOUT PASSING THE ANAEROBIC THRESHOLD

Take a highly-trained track & field athlete. Make him/her participate in a sixty-minute elite-level gymnastics stretching class. During the class, most of the body positions are static and passive. The athlete is instructed to relax and let gravity do the work. The athlete's heart rate will not significantly increase. He won't burn a significant amount of calories when compared to a track practice. He will not get near the lactate threshold. However, the next day, the high level track athlete will be sore. In fact, he will barely be able to get out of bed. How is that possible if he doesn't cross the lactate threshold?

Delayed Onset of Muscular Soreness (DOMS) is defined as the occurrence of pain arising 24-48 hours after a bout of unaccustomed muscular activity (5). Soreness stems from minor musculoskeletal tears. The pain arises from inflammation, which is the first phase of tissue healing. The muscle repairs itself by increasing collagen production, and then remodels itself with proper collagen fiber alignment and increases tissue strength (6).

The key phrase of the above paragraph is "unaccustomed muscular activity." Individuals adapt to the imposed demands of their training programs. Take any high level athlete, and place him into a training program with entirely different performance demands, and the athlete will become sore. The principle of overload also applies here. The muscles can get sore from the principle of overload, because the body is not accustomed to the increased volume of work.

Coaches must also keep in mind that soreness can not be completely eliminated from training. Athletes do not have to get sore every workout in order to improve. However, if enough muscle damage occurs, soreness will occur, no matter what precautions are made or supplements taken. Coaches know how to limit the intensity of muscular soreness. Workouts should include a general warmup, specific warmup, introduce exercises simple to complex, easy to hard, and include a cooldown in all workouts.

LACTATE IS GOOD, AND IT'S NOT LACTIC ACID

Lactate production does not cause acidosis, in fact it is the opposite. Lactate production during intense exercise prevents pyruvate accumulation and supplies the NAD(+) needed for phase 2 of glycolysis (7). Lactate delays muscle fatigue and helps exercise performance remain high.

Another reason for the myth of lactic acid creating acidosis in the body may stem from the misconception that lactic acid and lactate are the same compound. They are not. Lactic acid is an acid, and can release a hydrogen ion once pH conditions drop below 7.0 (8). However, the human body does NOT produce lactic acid. Lactate (not an acid), is a product of a side reaction in glycolysis.

Lactate may be in the muscles during the cooldown. However, within a few hours of the completion of a workout, the lactate is completely removed from the muscles. It is not present in the muscles the next day when the recovery workout takes place.

WHY DO RECOVERY RUNS ACTUALLY WORK?

Recovery runs work. Sore track athletes feel better after completing them, much like the old-school bodybuilding "flushing" workouts. (On a side note, track & field is not the only sport that still refers to recovery workouts as "flushing lactic acid." The common mistake is nearly an epidemic across western sports coaching vocabulary, and the fountainhead of this article.)

Understanding recovery is the key to understanding why recovery runs work. Recovery can be defined as the body's ability to repeat or exceed performance after an effort. This includes the normalization of physiological functions (blood pressure and heart rate), restoration of energy storage (glucose and glycogen), and replenishment of cellular enzymes (such as phosphofructokinase.) Recovery is also characterized by continued removal of metabolic end-products (9). Muscle recovery happens during and after workouts.

Recovery is important in all workouts, and is planned in micro- and macrocycles. How long rest is enough between sets to repeat performance? How long between workouts to increase performance? These questions are especially important in track & field. In sports such as basketball or American football, athletes need to be able to jump and accelerate when they are not fully recovered from an effort. Track coaches have the advantage of planning regular rest intervals during practice.

Recovery workouts help the body because of oxygen, warmup effect, training effect, and growth hormones. A recovery workout increases the heart rate, and in turn, increases oxygen intake. The blood brings the oxygen to the muscle, and the oxygen promotes healing. Recovery runs also warm the muscles, which relieves the pain of stiffness.

Light workouts still give the body a training effect. The workouts promote muscle modeling, and increases production of growth hormones. These compounds, combined with oxygen, decrease inflammation and rebuild the impacted muscles, removing soreness and improving function.

CONCLUSION

The purpose of this article was to translate recovery workout terminology to words that today's athlete understands and respects. Today's society is very sensitive to vocabulary. As the *Tao Te Ching* states, "Perfect words leave no doubts."

Coaches can no longer use the words "lactic acid" when describing the cause of muscle burning or soreness. Lactic acid is not present in the human body. Hydrogen ions cause the burn. Lactate actually promotes glycolysis. The body gets

sore from muscle damage and the ensuing inflammation. Lactate is not present in the muscles by the time the next day's recovery run takes place.

Coaches can no longer use the phrase "to flush lactic acid" to explain why athletes are completing the running. Say, "this exercise will help promote muscular healing by increasing oxygen and growth hormones in the inflamed muscles," or simply, "this recovery run will make you feel better."

Today's student wants to know why he is doing what he's doing, and is taught to ask questions. Coaches need to be prepared with the proper answers.

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Ken Kashubara is a Certified Strength and Conditioning Specialist and a USTF Level 1 Certified coach. He runs a USATF approved club, Sport Heaven, out of his gym in Bloomfield Hills, Michigan.

A BETTER WAY TO THROW THE DISCUS?

The authors are simply recommending a hammer-type preliminary turn for discus throwers as a way to increase release velocity. A study using one participent is hardly conclusive, but perhaps gives us some food for thought.

BY PROF. DR. MOSTAFA ATWAA , ATHLETICS DEPARTMENT, PHYSICAL EDUCATION FACULTY, SADAT CITY UNIVERSITY; PROF. DR. MOHAMMED GAMAL, BIOMECHANICS DEPARTMENT, PHYSICAL EDUCATION FACULTY, HELWAN; UNIVERSITY; DR. MARWA SAKR, ATHLETICS DEPARTMENT, PHYSICAL EDUCATION FACULTY, SADAT CITY UNIVERSITY, EGYPT.

ABSTRACT

The aim of throwing the discus is to achieve the greatest horizontal distance as possible. Each phase of technique has its role in the resultant performance. The general trend of training programs is to improve physical fitness in order to increase the resultant distance. The authors aimed to modify throwing technique as a way to achieve greater distances in the discus throw event, in a way that doesn't conflict with IAAF-certified throwing technique. The study was descriptive and empirical, while a comparison in some kinematical aspects was carried on between two discus trials. One was performed with the current style and the other was performed with the modified style. The participant was an Egyptian elite decathlon athlete. The results emphasized the advantages of using the modified technique, due to the mechanical advantages achieved.

THE STUDY'S MAIN IDEA

The main factors that affect discus throw distance are height, angle, and velocity of release. The height of release depends on the thrower's anthropometric characteristic (physical height) and the angle of release depends on accurate technique, while the velocity of release depends on physical abilities which are improved by the training program. There is also the aspect of the length of the discus' path from the beginning till the release; the longer this path the greater is velocity at release.

Discus throw technique has a preparatory phase (wind-up), which is in the opposite direction of the turns. As a result, the discus reaches zero velocity at the beginning of the turns

Table 1: Discus Throw Technique Phases for both styles (Common, Modified)

	Common Style		Modified Style
1	The grip	1	The grip
2	Wind-up	2	Wind-up
---		3	One turn of hammer throw technique
3	Turns	4	Turns
4	Power position	5	Power position
5	Release and balance	6	Release and balance

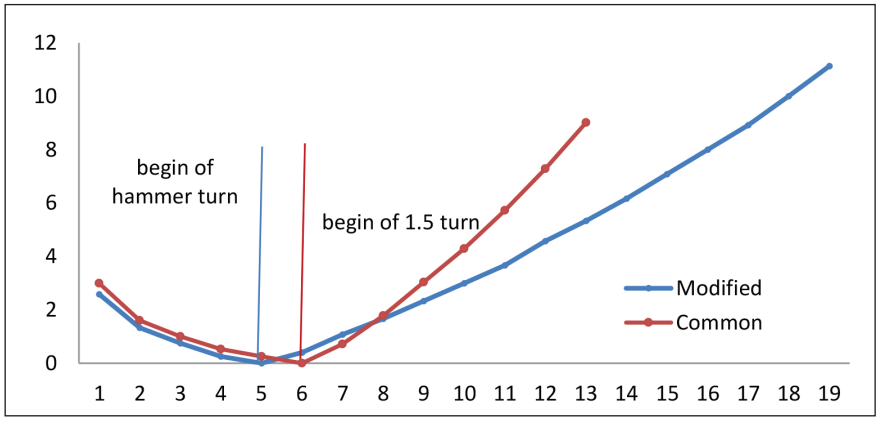

Figure 1: The initial velocity of the discus at the beginning of turns of both styles (Common, Modified)

then increases gradually during the turn until the release phase, which means that the shorter the duration of the turn the greater the velocity of release is (5). Therefore, the modified discus throw style is based on:

1. Prolonging the motion path of the discus.
2. Increasing the initial velocity to greater than zero by adding a turn similar to hammer throw technique (double support and single support) as a preparatory phase after wind-up (Table 1).

In the common discus throw style (1.5 turn), the velocity would be zero at the beginning and (x) at the release, but as a result of the modification the initial velocity would be greater than zero at the beginning of 1.5-turn. Accordingly, the release velocity would be increased by the same amount of the increment at the beginning, theoretically. That would be the first targeted change, in one of the kinematical parameters, that affects distance if the other parameters were the same.

THE PURPOSE

1. Is the modified style applicable and legal according to the IAAF competition rules?
2. Comparing the common discus throw style (1.5 turn) with the modified style (2.5 turns) based on the kinematical parameters at the beginning of the turn and at release instance.

THE PROCEDURES

The participant in this study was an Egyptian decathlon athlete, who was second in the national championships (2007). He was 1.91m (6'3/4") tall, 82 Kg (181lbs) in weight, 21 years old. His personal record for the discus was 41.80m (137'2"). The participant learned the modified style of discus then he threw many

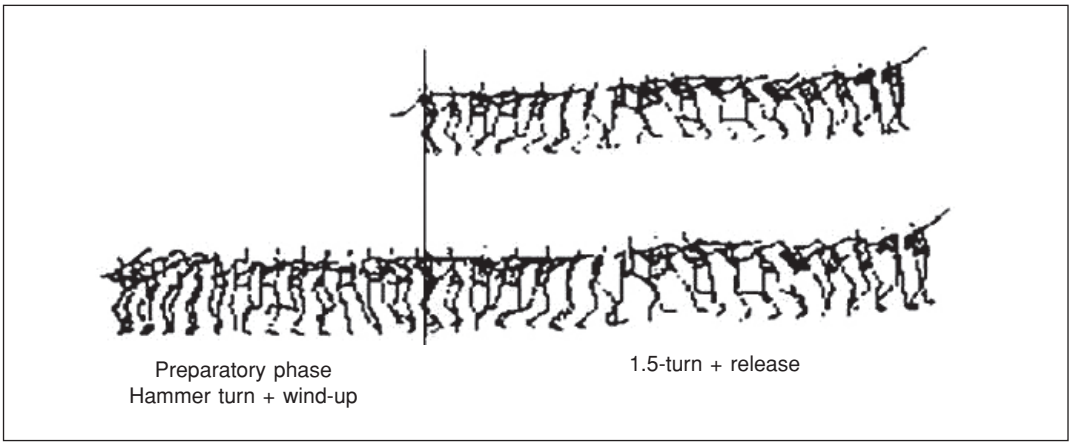

Figure 2: The modified discus throw style phases

Table 2: The initial velocity (m/s) at the beginning of the 1.5-turn in both discus throw styles (common, modified)

Common Style			Modified Style		
Phase	Duration ()	Velocity m/s) in frames	Phase	Duration (s)	Velocity (m/s) in frames
Wind-up		3	Wind-up		2.58
		1.6			1.33
		1			0.75
		0.53			
					0.25
					0
			One turn of hammer throw technique	1.8	0
					0.4
					1.08
		0.25			1.67
1.5 turn	2.28	0.00			2.33
					3
					3.67
			1.5 turn	1.32	4.58
		0.72			5.33
		1.78			6.17
		3.04			7.08
		4.29			8
		5.73			8.92
		7.28			10
		9.01			11.13

Table 3: The time duration of the technique phases for both styles of discus throw (common and modified)

	Common Style		Modified Style		Differences
	Phases	**Duration (s)**	**Phases**	**Duration (s)**	
1	Wind-up	---------	Wind-up		---------
2	---------	---------	Hammer throw turn	1.08	**1.08**
3	1.5 turn	1.48	1.5 turn	1.08	0.4
4	Power position and release	0.28	Power position and release	0.24	0.04-
5	Balance	0.52	Balance	0.72	0.2
sum		2.28		3.24	0.96

trials using both styles. The best of each was chosen and analyzed 3D by Motion Track program. The motion analysis was employed to:

1. Improve the ability to perform the modified style.
2. Identify the changes in the kinematical parameters during release instance.

RESULTS AND DISCUSSION

The ability to perform the modified style

Connecting one turn of the hammer throw technique with 1.5-turn of the discus throw technique may need a skillful athlete to maintain balance, because the athlete uses the lateral quarter of the foot of the support leg during this connection. The motion path curve of the discus after modification seems to be smooth (see Figure 1), which means that it has no technical gaps or problems. This fluency could be observed by the velocity averages along the modified style motion (Table 2).

Table 2 shows that the primary velocity of the discus in the common style at the beginning of the turns was zero, while it was 4.58m/s in the modified style. This reflects the benefit of adding the support phases before the main 1.5 turn of discus throw.

Figure 1 indicated the semilinear increment of the velocity during the throw path in the two trials (the common and the modified), which confirmed the harmony of the modified style and the probability of connecting the two support phases of the hammer with the 1.5 turn of discus. In addition. Table 4 shows that the athlete was able to maintain balance after release.

Table 3 indicates the duration of 1.5-turn in both styles. Where it was 1.48s in the common style, it was 1.08s in the modified style. The authors note the difference (0.4s) in duration for the hammer throw turn

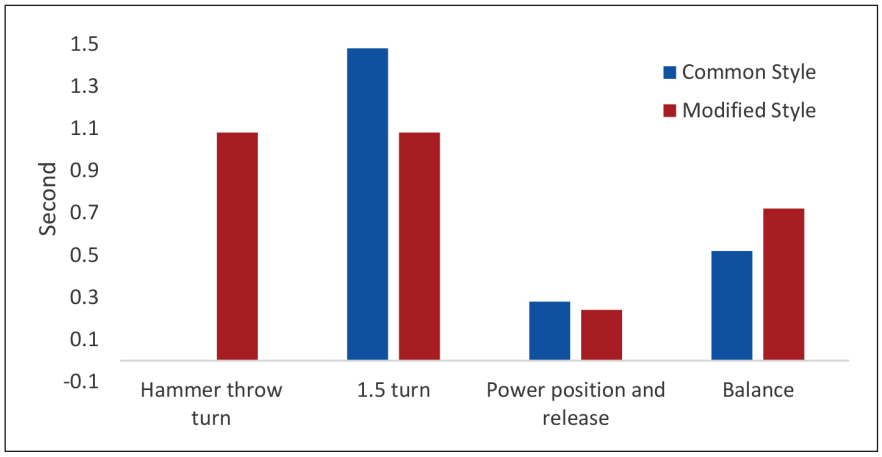

Figure 3: The time duration differences between the phases of both discus throw styles (common and modified)

Table 4: Contribution percentage of the footwork of the modified style into the circle

Phases	Distance (m)	Percentage (%)
Hammer throw turn	0.75	%30
1.5-turn	1.75	%70
Sum	2.5	%100

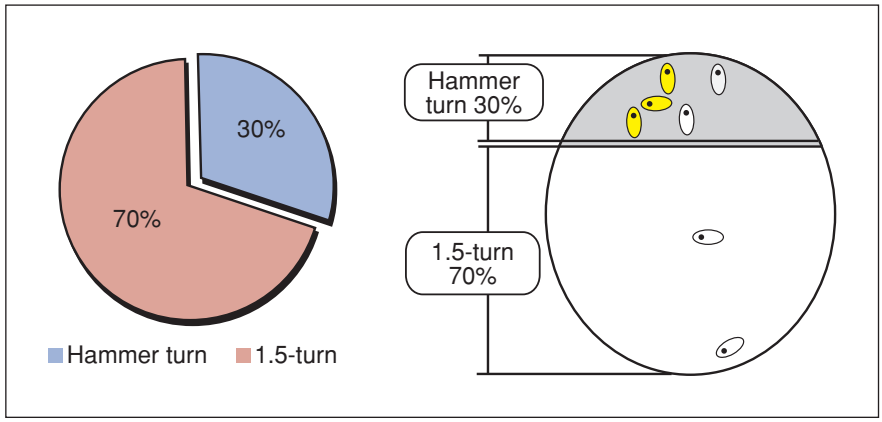

Figure 4: Contribution percentage of the footwork of the modified style into the circle

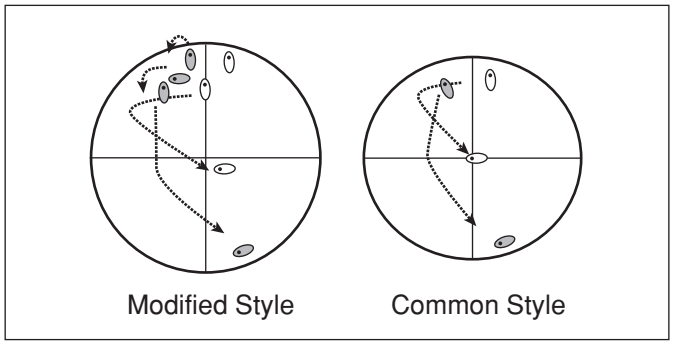

Figure 5: Feet support positions in the circle of both discus throw styles (common and modified)

performed before the 1.5-turn which accelerates the discus entering the turn with velocity greater than zero, unlike the common style.

Table 4 shows the integration between footwork for the hammer throw turn and the 1.5-turn of the modified style. Figure 4 presents the contribution percentage of footwork in the modified style (30%) for the hammer throw turn and (70%) for the 1.5-turn.

Kinematical Parameter Changes at Release

Table 5 indicates the advantage of the modified style by increasing the path length to 14.03m as opposed to 8.43m, which results in an increment of the personal record by 2.48m (see Table 6).

Table 6 and Figure 7 illustrates the differences between the values of velocity, height, and height of release in both styles, which shows the advantage of the modified style in release velocity which resulted in a greater thrown distance.

CONCLUSION

- The modified style throw technique is legal, acording to IAAF rules.
- The modified style in this study resulted in increasing the personal record of the participant athlete by 6% greater than his previous record.

Table 5: The length of the discus path in both discus styles (common and modified)

Style	Path length (m)	The increment percentage of modified
Common	8.43	%1.66
Modified	14.03	

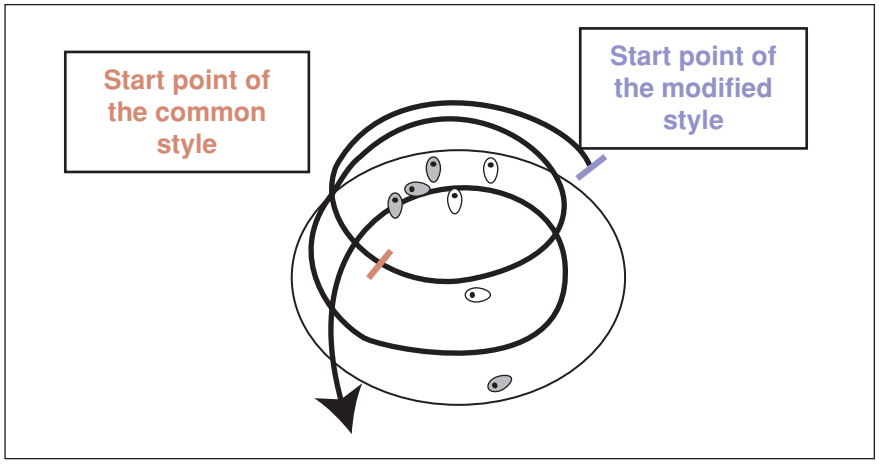

Figure 6: The discus path in both styles (common and modified)

Table 6: The effective factors on thrown distance of both styles (common-modified)

Style	Release velocity (m/s)	Release angle (degree)	Release height (m)	Personal record
Modified	19.36	30.05	2.13	44.28
common	17.48	41.42	2.23	41.80
differences	1.88	11.37-	0.10-	2.48

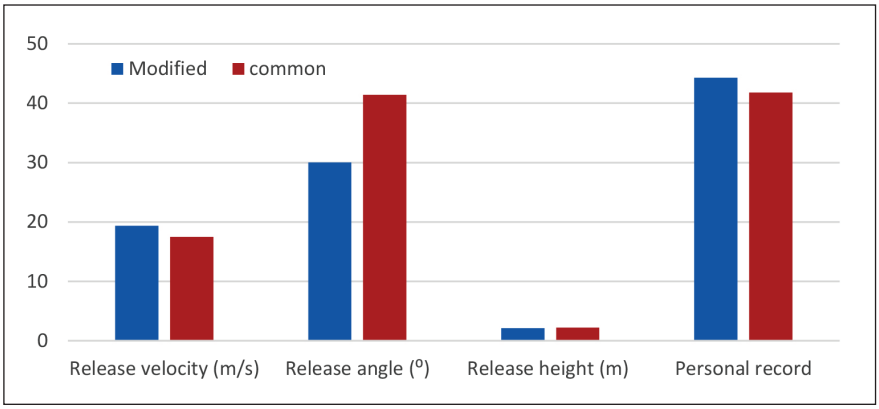

Figure 7: The effective factors on thrown distance of both styles (common-modified)

- The modified style resulted in increasing the geometric path of the discus motion.
- The modified style resulted in increasing the release velocity by 10.75% more than the common style.

RECOMMENDATION

- We recommend teaching the athlete the new style after mastering the common style.

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INNOVATIONS

This section is dedicated to bringing new product developments to the attention of the U.S. coaching community.

Flightscope, a developer and manufacturer of 3D Doppler tracking radar for sports, has provided t&f throwers a new way to analyze and improve their throwing. "Flightscope Athletics" is a portable, lightweight radar device that can track throws by measuring data points like launch speed, flight time and release angle. The product uses phased-array 3D tracking radar technology and advanced ballistic flight analysis software to track launch-through-landing of any throwing implement—hammer, shot or discus. Immediate results provide instant feedback re throw data in real time, with synced video. The technology also features sector grouping to track performance, showcasing where each throw has landed throughout a training session.

For more information on Flightscope Athletics, visit https://athletics.flightscope.com/

SHIN SPLINTS

It's a condition which can cripple an athlete. Here's some advice on reducing the problem.
This article first appeared in *Athletics Weekly*, November 2, 2017.

There's barely an athlete out there who hasn't suffered from shin pain at some point in their career. Paul Hobrough, a physiotherapist and author of *Running Free of Injuries* (Bloomsbury, £18.99), says he sees "a tsunami of shin pain sufferers each year" and Matt Todman, director of the Six Physio chain of physiotherapy clinics in London, says it is among the most common problems he treats among patients.

In most cases, pain at the front of the leg will be diagnosed as 'shin splints', an umbrella term for multiple different possible diagnoses ranging from muscle DOMS (delayed onset muscle soreness) to tendinitis and periostitis.

WHAT ARE SHIN SPLINTS?

Known medically as medial tibial stress syndrome (or MTSS), the condition causes pain on the lower, inside part of the shin bone and while it initially might feel painful during exercise, it can progress to feeling sore even during periods of rest.

"My belief is that we have become overly diagnostic in labeling some injuries and problems," says Todman. "Shin splints are a case in point and you may have been given very complex-sounding names for pain in the front of your leg. Basically, it's all shin splints."

WHAT CAUSES IT?

There are multiple causes and no case of shin splints is the same. "Risk factors have been shown to be increased BMI (body mass index), poor alignment of the bones in the foot, a loss of plantarflexion (ability to point the toes) and a loss of hip rotation externally," says Hobrough.

One or more of these biomechanical factors—or overtraining—contrive to overload the muscles of the lower leg. "Muscles need a chance to develop in size, strength and flexibility and most people who lift weights know not to do bicep curls every day," Hobrough says. "Running is basically the same as working the equivalent muscle in the lower leg this way."

HOW DO YOU KNOW IF YOU HAVE SHIN SPLINTS?

A painful spot on the inner edge of your shin is often a giveaway sign you have developed shin splints.

"The periosteum, the surface of the bone, becomes inflamed and tender as it's constantly trying to repair the stress that repetitive activity places on it," says Dr Juliet McGrattan, a GP and author of Sorted: *The Active Women's Guide to Health* (Bloomsbury, £16.99).

If you feel pain over a few inches of your lower leg then it is likely shin splints.

McGrattan adds: "If the pain is in a very precise location, then you may need an X-ray to rule out a bone problem like a stress fracture."

HOW TO TREAT IT

McGrattan says the PRICE technique—Protect, Rest, Ice, Compress and Elevate—should be used in the acute stages.

"Mild MTSS will improve quickly with rest, she says. As with any injury or pain, if you begin to develop shin pain, listen to your body and reduce or stop the aggravating activity," suggests Hannah Zreik, the physiotherapy team lead at Bupa Health Clinics. "If the pain doesn't go away after rest, see a physiotherapist."

HOW TO PREVENT IT

Check your shoes—they can often be an underlying cause. "Other possible reasons are poor flexibility or poor core and lower body strength," Zreik says. Todman suggests practicing walking on your heels twice a day for three minutes at a time. "Do it barefoot around the house," he says. "It really helps to strengthen the muscles in the shin area."

USATF COACHING EDUCATION

2019 CALENDAR OF SCHOOLS

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

Level 1

Jan 4-6	Fresno State University - Fresno, CA
Jan 18-20	Parkview High School - Lilburn, GA
Jan 19-20	Skyline High School - Ann Arbor, MI
Jan 19-20	University of New Mexico - Albuquerque, NM
Jan 19-20	Chabot College - Hayward, CA
Jan 25-27	Kennedy Catholic High School - Burien, WA
Jan 26-27	Alhambra High School - Phoenix, AZ
Feb 15-17	Canby High School - Canby, OR
Feb 16-17	North Central College - Naperville, IL
Feb 16-17	Providence Day School - Charlotte, NC
March 9-10	Catholic University of America - Washington, DC
March 16-17	Villanova University - Philadelphia, PA
May 18-19	Allen High School - Allen, TX
May 31-June 1	Christian Brothers High School - St. Louis, MO
May 31-June 1	National Training Center - Clermont, FL
June 7-9	Life University - Marietta, GA
June 7-9	Drury Inn La Cantera - San Antonio, TX
June 8-9	Morristown Medical Center - Morristown, NJ
June 15-16	Union High School - Tulsa, OK
June 16-18	UNCG - Greensboro, NC
June 17-18	Stillwater High School - Stillwater, MN
June 22-23	North Central College - Naperville, IL
June 28-30	St. Mary's High School - Medford, OR
July 19-21	Johns Hopkins University - Baltimore, MD
July 19-21	Nassau Community College - Garden City, NY
July 26-28	TBA - Pittsburgh, PA
August 2-4	Yale University - New Haven, CT
Sept. 27-29	Community College of Philadelphia - Philadelphia, PA
Nov 1-3	Marian University - Indianapolis, IN
Nov 15-17	Life University - Marietta, GA
Nov 16-17	Allen High School - Allen, TX
Nov 23-24	Virginia Wesleyan University - Virginia Beach, VA
Dec 6-8	St. John's School - Houston, TX
Dec 7-8	Tennessee State University - Nashville, TN
Dec 13-15	Westerville South High School - Westerville, OH
Dec 13-15	University of South Carolina - Columbia, SC
Dec 14-15	Pine Crest School - Ft. Lauderdale, FL

EFFECTIVE JANUARY 2019 – NEW EDUCATION STANDARD FOR USATF COACHES REGISTRY

To further elevate the professional credibility of the USATF Coaches Registry and its members, USATF has established a new **Education Standard** for qualification into the **USATF Coaches Registry**. The Education Standard provides for a baseline standard of professional education or coaching accomplishment in the sport of track and field for coaches seeking admission to the Registry.

By establishing a baseline standard of professional education or coaching experience, the Education Standard aligns with the best practices for professional certifications in other fields, within the coaching industry at large, and with licensing protocols of other Olympic family national governing bodies.

Overview
To be part of the USATF Coaches Registry, an individual must, currently, be a USATF member, undergo a background screen from approved screening agency, and have completed USOC SafeSport Compliance requirements.

This Education Standard is a one-time requirement, subject to any applicable recertification requirements of the respective course of education. Once a coach has met the Education Standard, he or she has fulfilled the requirement for as long as the coach is part of the Registry.

Eligibility
In addition to the required SafeSport Compliance requirements above, any person who has completed one of the approved coaching education courses for track or field or who qualifies based on career accomplishments as a track and field coach is eligible.

Meeting the Education Standard
There are two different paths to meet the Educational Standard for the Coaches Registry: Complete a verified educational course, OR achieve a specified coaching accomplishment.

Path 1: Complete a verified course of education. *Complete any one of the following courses:*

a. Level 1 of the USATF CE Professional Pathway of Coach Certification with course completion on or after January 1, 2013
b. Level 2 or 3 of the USATF CE Professional Pathway of Coach Certification
c. USATF Cross Country Specialist Course
d. USATF Event Skill Specialist Clinic (Learn By Doing Clinic)
e. NFHS Coaching Track and Field (online) AND any approved sports science course on USATF Campus (online)
f. Technical Basic course of the USTFCCCA Academy or any advanced course (online or classroom)

Certificate of completion for any of the above courses serves as verification of Education Standard.

Path 2: Accomplish an Education Standard equivalency during one's coaching career, through a body of work, a career honor, or demonstrated professional coaching career. *Demonstrate any one of the following:*

a. Member of an international coaching staff selected by USATF over the last 5 Olympic quadrennials.
b. Primary coach of record of a medalist athlete on any one of the "big three" teams (Olympics, World Champs, Pan-Am Games)

c. Elite technical coach of USA National Team athletes over a 10-year period (coach must list athletes' names and contact information)
d. Hall of Fame Coach for USATF, USTFCCCA or National Scholastic Track Coaches Association
e. National Coach of the Year for USATF or USOC
f. USTFCCCA National Head or Assistant Coach of the Year for men's or women's (NCAA, NAIA, or NJCAA) cross country, indoor or outdoor track & field
g. Employment as a track coach at a scholastic or collegiate institution for a 10-year period verified by employers' information.

The USATF National Office staff will provide oversight of all components of the Coaches Registry. An oversight subcommittee from the Coaches Advisory Committee will review and evaluate any issue with a coach's education standard.

'TIS THE SEASON TO SAVE ON USATF CAMPUS

Don't miss this limited-time offer to gift yourself improved performance and better coaching this holiday season! Now through January 15, 2019, save 25% on all courses on USATF CAMPUS. The online platform provides USATF Coaching Education at your convenience, with content developed by leading coaches and sports scientists. Enter promo code **WISHLIST25** in the check out to redeem on any of the 10 courses available.

Enroll now at courses.usatf.org

USATF AND USOC COACHNG EDUCATION AWARD WINNERS

Nike Coach of the Year: Caryl Smith Gilbert, Director of Track & Field, University of Southern California

The Nike Coach of the Year Award was established in 1998 to recognize the outstanding achievements by coaches in the sport of track and field.

USOC Doc Counsilman Science Award: Lance Brauman, Founder and Coach, PURE Athletics

Established in 2004, the Doc Counsilman Science Award recognizes a coach who utilizes scientific techniques and equipment as an integral part of his/her coaching methods or has created innovative ways to use sport science.

Dr. Joe Vigil Sports Science Award: Mike Turk, Head Track & Field Coach, Illinois University

This award recognizes a coach who is very active in the area of scholarship, and contributes to the coaching literature through presentations and publications. This award identifies a coach who utilizes scientific techniques as an integral part of his/her coaching methods, or has created innovative ways to use sport science.

Ron Buss Service Award: Katie Adams, (Formerly) Assistant Track & Field Coach, Wellesley College

This award recognizes a coach that has a distinguished record of service to the profession in leadership roles, teaching, strengthening curricula and advising and mentoring coaches. This person is a leader, whose counsel others seek, and who selflessly gives his/her time and talent.

Fred Wilt Coach/Educator of the Year Award: Mike Judge, Founder and Coach, Throw 1 Deep

This award recognizes a coach that has a distinguished record, which includes sustained, exceptional perfor-

mance. This award will be presented annually to recognize one individual who has exemplified passion and leadership nationally for the promotion of USATF Coaching Education.

Vern Gambetta/Young Professional Award: Chris Richardson, Head Cross Country/Track & Field Coach, Cerritos College

This award recognizes a young coach in the first 10 years of his/her career that has shown an exceptional level of passion an initiative in Coaching Education. This award will be presented annually to recognize one individual who has exemplified passion and leadership nationally for the promotion of USATF Coaching Education.

Terry Crawford/Distinguished Female in Coaching Award: Melissa Ferry, Head Cross Country/Track & Field Coach, Virginia Union University

This award recognizes a female coach that has shown an exceptional level of accomplishment, passion and initiative in Coaching Education. This award will be presented annually to recognize one female coach who has exemplified passion and leadership nationally for the promotion of USATF Coaching Education.

Kevin McGill/Legacy Award: Dr. Matt Lydum, Head Cross Country/Track & Field Coach, Pacific University

This award recognizes a veteran coach with 25+ years of involvement that has shown an exceptional level of passion an initiative in Coaching Education. This award will be presented annually to recognize one individual who has exemplified passion and leadership nationally for the promotion of USATF Coaching Education.

Level 2 Coaches/Rising Star Award: Nick Houstoulakis, Head Boys Track Coach, Marietta High School

This award recognizes a coach that has utilized the USATF level 2 CE program to make an impact on their coaching that includes sustained, exceptional performance. This award will be presented annually to recognize one individual who has recently completed the level 2 school and it has helped to make an impact on their coaching. This award winner exemplifies the impact of the USATF Coaching Education program.

USA PENTATHLON ELITE LEVEL RECRUITMENT PROGRAM

Dr. Genadijus Sokolovas, CLT Dan Brown

USA Pentathlon, Army WCAP

USA Pentathlon is looking for high school and collegiate runners with a swimming background. Benchmarks for elite level recruits are based on their pentathlon points in running and swimming as well as experience in other sports (see benchmarks below). Our goal is to recruit athletes who have enough run+swim points to qualify for USA Pentathlon training camps at the Olympic Training Center in Colorado Springs.

Benchmarks for Elite Level Recruits

Gender	Run Time (2 miles)	Swim Time (200m)	Pentathlon Score in Run & Swim	Experience in Other Sports
Women	10:55 645 points +/-1sec=2pts	2:40 230 points +/-1sec=1pt	875 points or higher	Fencing, Equestrian, Shooting Other sports (combat sports, games, gymnastics, etc)
Men	9:40 720 points +/-1sec=2pts	2:30 250 points +/-1sec=1pt	970 points or higher	Fencing, Equestrian, Shooting Other sports (combat sports, games, gymnastics, etc)

Training Camp for Elite Level Recruits at No Charge

To qualify for a free camp, female runners should score 875 points in running and swimming (see the benchmarks above). Examples of score for females:

- Running 2 miles in 10:55 (575 pentathlon points) and Swimming 200 meters 2:40 (230 pentathlon points).

Any combination of swimming and running times (faster swimming and slower running or slower swimming and faster running) that scores 875 qualifies female athletes to attend the camp at no charge.

To qualify for a free camp, male runners should score 970 points in running and swimming (see the benchmarks above). Examples of score for males:

- Running 2 miles in 9:40 (650 pentathlon points) and Swimming 200 meters 2:30 (250 pentathlon points

Any combination of running and swimming times (faster swimming and slower running or slower swimming and faster running) that scores 970 qualifies male athletes to attend the camp at no charge.

Athletes who have good running and swimming scores are invited to contact Dr. Genadijus Sokolovas at gsokolovas@gmail.com. Please, also visit USA Pentathlon website www.usapentathlon.org.

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