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My first freshman XC team did not look too good that first day of practice. They were little, scrawny and didn’t have a clue what they were getting into. In truth, they shared many traits with their coach.

To their credit they kept showing up. They were diligent at practice and generally supported by the JV and varsity squads. We started to bond in the early weeks. At an early invitational I chanced upon an older coach whose record and guidance I’d always admired.

We shared some polite formalities and he complimented me on the early success of the varsity. I gestured towards the frosh and mentioned how much fun I was having with them. I mentioned their eagerness to learn, their enthusiasm at practices and how it really spurred me on.

Without missing a beat, he looked at the frosh, who were out of earshot, “You are wasting your time with those s***birds, they’ll never be any good; you’re just wasting your time.”

I was stunned. I looked at the freshmen. They were still little and scrawny, but they were laughing and cheerful and even though they had a so-so meet they were doing their best. I took the comment personally. My feelings were hurt, really hurt. I never had another coaching discussion with that guy.

But his words stuck with me like a bad tattoo. Maybe there wasn’t any talent there. Maybe I just didn’t have the experience to see this. Maybe I was wasting my time.

But what could I do? I had to play the cards I was dealt. All I could do was give them my best, teach and coach them as well as I could and let nature or nurture or the future bring what may.

Together we got better. There were bumps and bruises along the way. We lost a few dual meets but there was also a steady climb up the ranks at invitationals. The talent emerged and their winning ways lifted the rest of the team.

We lost the frosh league championships by three points when the #3 guy missed the bus. I was discouraged and angry. What I didn’t know, what I couldn’t know, was that this group wouldn’t lose another league championship again for the rest their high school careers. There were individual league champions and even a medal at the state
MARAUDER ELITE INTERMEDIATE HURDLING

A good overview of 400-meter hurdling, with training routines and special drills.

BY MIKE THORSON, ASSISTANT COACH (HURDLES)
AT THE UNIVERSITY OF MARY (FORMER DIRECTOR OF TRACK & FIELD/CROSS COUNTRY AT THE UNIVERSITY OF MARY)

OVERVIEW/INTRODUCTION

The 400-meter hurdle race for men and women is the most demanding of the hurdle-sprint events. It requires a combination of speed endurance and hurdling skills to go along with a planned and unique stride pattern that demands a very special focus throughout the one-lap race. The race consists of 10 hurdles placed 35 meters apart with a 45-meter run to the first barrier and a 40-meter run-in. The hurdle heights are 91.5 cm (36") for men and 76.0 cm (30") for women. The difficulty in the race comes from a large margin for error which is minimized by adopting and rehearsing a specific race plan that meets all situations.

The necessary qualities for a successful, elite 400-meter hurdler include:

1. KINESTHETIC ABILITY—The athlete must have the ability to modify and adapt the race plan due to weather, lane assignment and prior technical issues during the course of the race.

2. RACE PLAN—A definite race plan with the correct pattern, pace, and 200-meter differentials must be trained.

3. SKILL—The required hurdling skills must be trained, with the hurdler training to competently hurdle with either leg.

4. SPECIAL ENDURANCE 1 AND 2—The athlete must be trained as a sprinter with the ability to perform very well in the flat 200- and 400-meter events. There are also elite 400 hurdlers who are very competent in the 600 meters and above and carry out a modified middle distance training schedule.

The 400-meter hurdles can be broken down into four distinct areas:

1. Start and approach to the first hurdle
2. Hurdle Clearance
3. Stride Pattern/Running Between the Hurdles
4. Run-in.
START AND APPROACH TO THE FIRST HURDLE

- Elite male hurdlers will use 20-22 strides to the first hurdle.
- Elite female hurdlers will typically employ 22-25 strides to the first hurdle.
- The lead leg will be in the back block if the hurdler uses even number of strides to the first hurdle. The trail leg will be in the back block if the hurdler uses an uneven or odd number of strides.
- The athlete must be prepared to make adjustments in block placement to overcome and deal with adverse weather, track conditions and the various demands of running in different lanes.
- The acceleration and stride patterns to the first hurdle are critically important in order to establish the proper rhythm and stride pattern between hurdles.
- The number of strides to the first hurdle must be predetermined through practice and rehearsed repeatedly in training.
- A 21-step approach to the first hurdle will typically result in a desired 13-step stride pattern between hurdles.
- A 22-step approach to the first hurdle will likely lead to the hurdler elongating or “reaching” for a 13-step stride pattern due to a slightly shorter stride length between hurdles one and two.
- A 20-step approach by males will usually require a hurdler to “chop” his step to get an effective 13-stride pattern to the second hurdle.
- A 23-stride approach will normally result in a 15-step pattern.
- The following chart can be used to determine the optimal number of strides to the first hurdle and the resulting stride pattern between the barriers:

<table>
<thead>
<tr>
<th>Strides to First Hurdle</th>
<th>Strides Between</th>
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<tbody>
<tr>
<td>21</td>
<td>13</td>
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<tr>
<td>22</td>
<td>14</td>
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<td>23</td>
<td>15</td>
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<td>24</td>
<td>16</td>
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<tr>
<td>25</td>
<td>17</td>
</tr>
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- The acceleration pattern (approach) for the first 30 meters of the 45-meter distance to the first hurdle will be very similar to that of an open 400-meter sprinter.
- The hurdler must begin to focus on the adjustments that need to be made for an effective hurdle one clearance at approximately 30 meters.
- Touchdown times will range from 5.8 to 6.2 for men and 6.1 to 7.0 for women for the first hurdle. Coaches and athletes should make use of the touchdown charts and time first hurdle touchdown times on a regular basis. It is critical that a hurdler be very, very confident in his or her first hurdle clearance because that sets the tone and stride pattern for the race.
- It is very useful to count the number of strides to the first hurdle, counting the trail contacts only to ease the counting difficulties. For 21, 23 and 25 strides the trail leg will contact the track 11, 12 and 13 times, and for 22 and 24 strides it will make contact 11 and 12 times respectively.
- It is very useful to both coach and athlete to make use of video and touchdown times to analyze not only the first hurdle clearance and approach, but the entire stride pattern for the race.
- A useful tool to determine the number of strides to the first hurdle is to put a mark on the track at approximately 43.40 meters from the start and have the athlete attempt to hit it with the desired takeoff without a first hurdle present. Tape or some other item can mark the location of the first hurdle at the 45 meter mark.
- Some corrections that can be made: If a hurdler is too close to hurdle one, he or she can take a short step from the blocks, obtain the upright sprint position quickly and take five or more shorter strides. This will typically solve the problem of running up on the hurdle. If the hurdler is too far away from the first hurdle (which is more often the problem), the athlete should add a stride by driving from the blocks with 4-5 short strides. The coach will have to experiment to determine the number of short strides.

HURDLE CLEARANCE

The basic mechanics of hurdling apply in the 400 Hurdles. It is a serious mistake to neglect the technical aspects of intermediate hurdling because of the lower heights. Although the hurdles are lower, the fatigue factor the hurdler faces will magnify the technical errors.
Points of emphasis in the 400 Hurdles clearance:

- The hurdler, leading with the knee, with an erect “hips tall” posture, should strive to accelerate the last few strides into the hurdle. A loss of speed, braking and increased number of strides typically results if the center of mass drops and the athlete does not accelerate into the hurdle.

- The last stride to the hurdle should be quicker and shorter, with a quick lead knee initiating the takeoff. The quick lead knee results in a delayed trail leg where it basically obtains full extension at the takeoff.

- The low hurdle height requires less body lean and the hurdler does not need to raise the center of mass as high. The trail leg will clear the hurdle in a lower plane, but it must continue to drive forward and upward for the hurdler to return to good sprint action/form off of the hurdle.

- The goal of the hurdle clearance stride is to “make it another sprint stride” with a slight deviation to negotiate the hurdle. The 400 hurdler does not need to be nearly as aggressive in attacking the hurdle as a sprint hurdler.

- A complete recovery of the trail leg and the continuation of the knee drive forward and upward will ensure an active landing and continue efficient sprint action.

- Rotation problems are often caused by reaching too far with the lead arm, a problem certainly magnified on the curve. The trail leg arm should deviate as little as possible from normal sprint mechanics.

- The athlete should be instructed to hold breath for three strides before and after each hurdle.

**STRIDE PATTERN/ RUNNING BETWEEN HURDLES**

There is no substitute for actual experience and race simulation for the training of the stride pattern between hurdles. The more frequently the athlete can compete in an actual race, the more efficient the stride pattern will become. Some considerations in the training of the stride pattern:

- The ideal stride pattern would be an odd number of steps between all hurdles. The 13, 15, 17, 19 stride pattern assures that the hurdler will take all the hurdles with the same left leg.

Kevin Young set the world record in the 400H at the 1992 Olympics in Barcelona: 46.78.
• The even number stride pattern will force the hurdler to alternate consecutive hurdles.

• The hurdler who leads with the left leg will have a definite advantage, with less distance to run and the fact that no adjustment needs to be made with the hurdler “squaring up” to the hurdle. A right leg lead will require the athlete to run further out in the lane and can create undesirable rotation upon landing. Thus, all developing hurdlers should be taught to use the left leg lead and have the ability to alternate when factors such as weather dictate that. That being said, there have been a number of great world class hurdlers who have employed a right leg lead.

• It will be very rare that an athlete will be able to take an “odd” number of strides for the entire race. Nearly all hurdlers will be forced to make a transition to a greater number of strides between the hurdles due to fatigue. This transition takes place when fatigue causes the hurdler to change to a shorter stride length resulting in the addition of one or two more steps between hurdles.

• This transition will, according to most authorities, occur at the seventh hurdle, but earlier obviously for less experienced hurdlers (Hurdles 5 or 6).

• There are three forms of transition according to most coaches:

The best transition is called single alternate, where the left leg lead hurdler switches from 13 to 14 strides, requiring the hurdler to hurdle with a right leg lead over every other hurdle for the duration of the race.

Paired Alternate Transition—In this transition, the left leg lead hurdler who is using 13 strides would take 14 and use the right leg, and then switch back to 14 to return to the left lead leg. The race would be finished with 15 strides, thus enabling the hurdler to return to the left leg lead.

Double Stepdown—typically used by inexperienced hurdlers who cannot alternate, the hurdler who is using 13 strides would switch to 15 and thus avoid hurdling with the right leg. The biggest disadvantage of this is that the stride length has to be greatly reduced and certainly adds fuel to the argument that all intermediate hurdlers should be taught to alternate.

• A hurdler must have a race plan and understand where the transition will take place. It is much better to have a planned transition than to have it forced upon the hurdler because of fatigue.

• The hurdler must be able to make late race adjustments due to fatigue and this will be much more readily possible if the hurdler can successfully alternate lead legs.

• Adjustments should be made well in advance of the hurdle. Minor step adjustments can be made by the hurdler by moving slightly in or out on the turn, or by even consciously shortening the stride during the last few strides coming off or into a hurdle.

• Only experience will develop the ability to make adjustments in stride length and frequency and hopefully eliminate the “chopping” and “reaching” that often occurs with less experienced 400 Hurdlers.

• Below are the strides between hurdles and the required stride length to achieve them:

<table>
<thead>
<tr>
<th>Strides</th>
<th>Stride Length</th>
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<tbody>
<tr>
<td>12</td>
<td>2.68m</td>
</tr>
<tr>
<td>13</td>
<td>2.45m</td>
</tr>
<tr>
<td>14</td>
<td>2.27m</td>
</tr>
<tr>
<td>15</td>
<td>2.13m</td>
</tr>
<tr>
<td>16</td>
<td>1.98m</td>
</tr>
<tr>
<td>17</td>
<td>1.85m</td>
</tr>
<tr>
<td>18</td>
<td>1.72m</td>
</tr>
<tr>
<td>19</td>
<td>1.60m</td>
</tr>
</tbody>
</table>

• Elite hurdlers are able to maintain the initial rhythm to the first hurdle, between hurdles, and through to the finish. All possible situations should be rehearsed. Great hurdlers will be able to adjust to all different factors, including wind (headwind, crosswind, tailwind), lane draw, weather conditions (cold, heat and rain) and track surface.

• Consistency between hurdles is the obvious goal of the intermediate hurdler, and a coach can check and record this through the use of touchdown times and charts.

• The last 2-3 strides before and after the clearance must be exact, precise and consistent. Adjustments must be made between the hurdles and not at the hurdles. There is very little margin for error in the stride pattern and hurdle clearance!

RUN-IN

Many 400 Hurdle races are won and lost in the 40-meter run-in. The necessary ingredients to solve the last 40 meters include special endurance 1 and 2, excellent running mechanics (especially when fatigued) and just plain old mental toughness. Many hurdlers make the mistake of finishing the race at the 10th hurdle and the race is far from...
over at that point.

The preparation for the run-in needs to begin well in advance of the 10th barrier when the required adjustments in stride length and stride frequency come into play to efficiently clear the last hurdle and drive to the finish.

There is no question that a high volume of speed endurance training is needed to produce a strong, fast run-in!

**RACE DISTRIBUTION**

Most coaches will agree that an even-paced race model is the most efficient manner to run the intermediate hurdle race. A coach can effectively measure this by the use of touchdown times. These can be recorded and then reviewed and analyzed with the athlete with the assistance of video to correct errors and to determine late-race adjustments.

**MANY 400 HURDLE RACES ARE WON AND LOST IN THE 40-METER RUN-IN.**

- An excellent “tool” for the coach is to use 200-meter split times. Ideally, according to most coaches, the difference in times for the first and second half of the race should be no more than 5%. As an example, that would be approximately 2.5 seconds in a 50-second 400 hurdle race.

- One of the keys to a successful race plan is to control the energy distribution the first 150 meters of the race. Hurdle 4 is the 150-meter mark in the 400 hurdles.

**BASIC INTERMEDIATE HURDLING MECHANICS**

1. The most fundamental mechanic in hurdling is leading with a flexed knee.

2. The shoulders and hips, which should always stay “tall,” should be square with the hurdle and a quick lead knee will lead to a desired delayed trail leg.

3. Developing intermediate hurdlers should always be taught to lead with the left leg.

4. The most valuable technique a coach can teach an intermediate hurdler is the ability to alternate lead legs over consecutive hurdles.

5. The lower heights in the intermediate hurdles require less body lean than the high hurdles and the hips must project forward with a lower center of mass.

6. Hurdlers who have a tendency to land on the heel should be instructed to use more body lean, staying on the ball of the foot as much as possible.

7. Intermediate hurdlers are basically asked to “run through the barrier” employing sprint mechanics.

**INTERMEDIATE HURDLE TRAINING**

Coaches of intermediate hurdlers have the very difficult job of designing and implementing training. They must not only train pure speed, but speed endurance and speed endurance 1 and 2 as well. It is a very fine balancing act to implement a complete and comprehensive training program. One of the ingredients that coaches often forsake in favor of speed endurance is the pure speed component. And that is a serious mistake. According to studies, the intermediate hurdler is actually sprinting at faster velocities than the high hurdler when you look at the average velocities of athletes in both races.

A brief explanation of the training that will be needed by the intermediate hurdler with examples of proven workouts included:

**SPEED**—Runs of 95-100% intensity over 30-60 meters or up to six seconds of running with full recovery.

Workout 1:

6 x 40 meter blasts with spikes from blocks @ 100% intensity with 6-7 minutes recovery per rep.

Workout 2:

1. 1 x 40m with spikes from blocks @ 100% intensity with 6 minutes recovery
2. 2 X flying 30 meters with spikes @ 100% intensity with 6 minutes recovery
3. 2 x 20 meters with spikes from 4-point @ 100% intensity with 5 minutes recovery
4. 2 x flying 30 meters with spikes @ 100% intensity with 6 minutes recovery

**SPEED ENDURANCE**—Runs of 95-100% of maximum over 60-150 meters or 7-20 seconds of running with full recovery or very close to it.

Workout 1:

1. 3 x Hurdles 1 and 2 from blocks @ race pace with 5 minutes recovery (Time touchdown times)
2. 3 x 150 meters with spikes @ 98-100% intensity with 6 minutes recovery.
Workout 2:
1. 1 x 150 meters with spikes @ 100% intensity with 10 minutes recovery.
2. 2 x Hurdles 4-5-6 with spikes @ race pace with 2-3 minutes recovery (This will simulate the fatigue factor with the reduced rest). Hurdles can also be reduced in height and the coach can determine the amount of rest depending on the desired training outcome.
3. 4 x 150 meters with spikes @ 98-100% intensity with 5-6 minutes recovery (each one progressively faster).

SPEED ENDURANCE 1—Runs of 95-100% of maximum over 150-300 meters or 20-40 seconds of running with full recovery.

Workout 1:
1. 3 x 300 meters with spikes @ 98-100% intensity without hurdles with 10 minutes recovery.

Workout 2:
1. 3 x Hurdles 1-2-3-4 with spikes from blocks @ race pace with 8-10 minutes recovery (Time touchdown times and reduce hurdle heights if needed).

SPEED ENDURANCE 2—Runs of 95-100% of maximum over 300-600 meters or 40 seconds of running or over with full recovery.

Workout 1:
1. 2 x 300 meters with no hurdles and finish with 3 hurdles at regular spacing @ race pace with full recovery (up to 12 minutes).

Workout 2:
1. 3 x 300 meters with hurdles from start at regular spacing, then to finish @ 400 meters with spikes @ race pace with full recovery (Record touchdown times and use reduced hurdle heights if needed). Recovery can be 12-15 minutes.

MANY COACHES DRILL AND USE TECHNIQUE WORK AT SLOW SPEEDS TO SEEK MASTERY OF SKILLS ONLY TO HAVE THEIR ATHLETES FALTER WHEN THEY ARE ASKED TO REPLICATE THE SKILL AT RACE SPEEDS.

NOTE: To obtain the desired training effects, often the training sessions will combine elements of all the different energy systems. Most intermediate hurdlers will train with the long sprint group and some even with the middle distance runners, depending on their strengths.

INTERMEDIATE HURDLE DRILLS

Drills that work!!

Most of the drills that 100- and 110-meter hurdlers utilize are applicable to intermediate hurdlers. Technical skills should never be neglected in favor of training other training components for intermediate hurdlers because the mechanical flaws in hurdle clearance will be compounded when you add the fatigue factor. Do not, however, over-drill, as many coaches do. Many coaches drill and use technique work at slow speeds to seek mastery of skills only to have their athletes falter when they are asked to replicate the skill at race speeds. There is no substitute for “the real thing.” It is critically important to train the proper rhythms and stride patterns. But with that being said, drills are important.

FOLLOWING ARE DRILLS THAT WORK:

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; 33”-36” for men) can be used for this drill at reduced, discounted spacing (28 feet for men and 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 four 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). 4) Ball: Same as 1-3 except the athlete holds a med ball extended out in front of them as he goes over the hurdle. Women use a 2k ball and men 3k. 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, 8-13 back-to-back steps for both men and women. The spacing will be determined by the speed that the drill is done by the athlete. 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 at race pace. Example: 2 X 2 X 4 hurdles. Athletes should be given lower recovery time between reps and sets to simulate the fatigue factor that the athlete will face in competition. The intermediate hurdler must learn to hurdle in a fatigued state! Spacing for the drill can be irregular and can be changed throughout the drill to force the athlete to alternate and learn to make adjustments. Hurdles are typically set 20-25 meters apart and are often lowered in height, depending on the number of repetitions and fatigue (lower heights require less energy and force).

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 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. Curve Drill. 1 Hurdle or a series of hurdles set on the marks or at irregular spacing (15-20 meters) with the athlete attempting to negotiate the hurdles at race pace. A left lead leg should be encouraged along with alternating. Athletes can do a series of reps, typically with small amounts of recovery to simulate race conditions. The drill should be done in spikes and touchdown times recorded.

THE INTERMEDIATE HURDLER MUST LEARN TO HURDLE IN A FATIGUED STATE!

Actual Training Week
Julia Hammerschmidt Week 31—April 17-23 (Competition Week)

Monday, April 17—3pm—1 x 350m-300m @ 95% with spikes (12 minutes recovery), Strength training.

Tuesday, April 18—3:30 pm—400 hurdle technique session. Med ball circuit. 15 throws.
Wednesday, April 19—3:30 pm—1 x 300m @ 95% with spikes (10 minutes recovery) 2 x 150m @ race pace with spikes with hurdles 1-2-3 from blocks (6 minutes recovery). Time touch-down times, Strength training.

Thursday, April 20—3:30 pm—recovery—stationary bike 15 minutes. Warmup, Accels with spikes, Med ball circuit 2 x 15 reps.

Friday, April 21—Pre-meet warmup, starts to hurdles 1-2 @ race pace with spikes, exchanges.

Saturday, April 22—North Dakota State University Invitational, Fargo ND 11 am.

Sunday, April 23—20 minutes Elliptical (Recovery).

Actual 400 Hurdle technique Session
Josh Wulfekuhle
April 21 (Competition Week)

1. Warmup.

2. 2 accelerations with flats (40 meters).

3. Lead leg-trail leg drill (3 hurdles).

4. 2 accelerations with spikes 40 meters.

5. Tempo hurdles—3 hurdles x 2 x 2 with spikes @ race pace @ 36” first set, 33” second set (1 minute recovery per rep/3 minutes per set), hurdles 20-25 meters apart—change distances between reps.

6. 2 hurdles from start x 2 with spikes @ race pace (36”). 5 minutes recovery. Time touch-downs.

7. Hurdles 7-8-9 x 2 @ race pace with spikes (Very little recovery—jog back), hurdles @ 36”.

8. Warmdown.

REFERENCES

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4. Winckler, Gary, University of Illinois, Clinics, Conversations, Articles

EDITORIAL COLUMN
Continued from page 7226

meet from that group. Little and scrawny became strong, fast and confident.

There is an aphorism in pop psychology that encourages one to “fake it, ’til you make it.” I never liked that one. The negativity of the “fake it” only ever smacked of simply false bravado to me, nothing more. Maybe there always is a twinge of doubt in forward dreaming, but I prefer to use long-range goals to draw or drive me to do what was required to get there. Small, successful steps on a long journey.

If the “little and scrawny” were simply treated as little and scrawny that is what they would remain. But what if high expectations, confidence in a method, and the example of time-tested values were the foundation of one’s actions? Citius, altius, fortius, right?

And when the champions arrived the stage was already set, the machine was in place so that their presence became a controlled emergence directed (in part) and encouraged (with honor and respect) by the little and scrawny now in team leadership.

Life’s adversities (or cutting remarks) can present stumbling blocks or stepping stones. I’ve never liked that little tidbit of advice either. But the older I’ve become the less I question it. It is funny how often I have reflected back on that chance conversation with the older coach. Had he not spoken his mind, had I not been so offended I’ve often wondered if I would have just settled for “what is” instead of daring to dream about “what could be.”

I want to take a moment to note the passing of Don Bragg. America’s Awesome Air Attack lost one of its charter members in Bragg, an Olympic gold medalist and former world record holder. Condolences to his family, friends and the Villanova track and field community.
1. What exactly is USADA and how would you describe its mission?

The U.S. Anti-Doping Agency (USADA) manages the anti-doping program for U.S. Olympic, Paralympic, Pan American, and Parapan American Sport. To protect clean competition and the integrity of sport, USADA provides education, leads scientific initiatives, conducts testing, and oversees the results management process for all United States Olympic Committee (USOC) recognized sport national governing bodies, their athletes, and events.

2. What is the difference between USADA and WADA?

USADA is a signatory to the World Anti-Doping Code and fully complies with the World Anti-Doping Code’s International Standards. Our anti-doping program is often referred to as the gold standard in the global anti-doping movement and we are at the forefront of the fight for clean competition.

3. What is USADA’s TrueSport program? How is it set-up and who is the main focus of the program?

a. TrueSport supports athletes, parents and coaches by partnering with organizations throughout the country to promote a positive youth sport experience. An experience that gives young athletes the tools to be leaders in life.

b. TrueSport is founded on three cornerstones:

i. Sportsmanship
Winning the right way—with respect and gratitude for teammates, coaches, parents, and competitors.

ii. Character Building
Using the sport experience to develop positive whole-life attitudes and behaviors: perseverance, courage, honesty, and more.

iii. Healthy Performance
Wellness-centric lifestyles that fuel athletic and personal success—in sport and in everyday life.

4. What are some suggestions you would make so coaches could foster positive attitudes towards “anti-doping” to parents, coaches and athletes?

Stressing the importance of competing clean, sharing resources with those they coach, being an advocate when an athlete is selected for testing and complete the Coach Advantage tutorial through USADA.
5. Do you have any suggestions for program information that an athletic director could use? Am I correct in assuming that successful prevention programs are a team effort?

The pocket guide is a great resource for anyone looking to gain more information on the testing process. The pocket guide is a condensed resource providing an overview of the doping control process, athlete rights and responsibilities, and other crucial information for young athletes and their parents and coaches.

6. When a urine test is done—how many drugs are tested for? I know when we did a urine analysis in school, we got profiles on 12 substances and 31 on a blood chemistry. Who determines what is to be tested for?

There is no exact number of banned substances a urine sample is screened/analyzed for. It is dependent on a number of factors, including, for example, if the sample was collected out-of-competition or in-competition. In addition, the list of prohibited substances is constantly growing and changing, thus to get a better idea of what substances a urine sample may be screened for, please check the WADA Prohibited List.

7. When blood is drawn, how much is needed and how long is the blood sample good for?

The amount of blood drawn/needed and how long the sample lasts depends on the analyses that will be performed. The ISTI Blood Sample Collection Guidelines put forward by WADA outline how much blood may be collected and discusses the longevity of a sample. On average, the amount of blood needed is 15-16 mL.

8. Typically, how much does a blood or urine drug test cost? And who pays for this cost?

The costs associated with a blood or urine sample can vary depending on a number of factors, including but not limited to, shipping costs and analyses scheduled. Typically, USADA or another Anti-Doping Organization who has oversight over the test or athlete will cover the costs associated with a blood or urine test, to include the storage of the sample at a WADA-accredited lab, which could last years.

9. How long are the samples stored? And who pays for that storage?

USADA or other Anti-Doping Organizations will cover the costs associated with storing blood or urine samples. Samples are required to be stored a minimum of three months and a maximum of 10 years.

10. Why are there A and B samples taken? And what exactly is an A sample and a B sample?

An A and B sample are the result of dividing urine collected during one sample collection session into two separate and secure containers. In the event that the A sample is reported as an Adverse Analytical Finding (“positive”), then the B sample can be used to confirm the analysis of the A sample.

11. How come a urine test is more the standard than a blood test?

Urine is extremely effective for anti-doping analysis because it can be characterized as the biological “waste” from a person and includes the metabolic breakdown products (metabolites) of food, drugs and endogenous waste products. A urine test is also less expensive, less invasive, and does not require a licensed phlebotomist.

12. Do the drug monitors actually have to watch you urinate?

Doping Control Officers, or DCOs, must watch the urine come out of the body to eliminate the possibility of someone tampering with the sample.

13. I have heard of one technique to beat a urine test is to drain the bladder of urine and re-inject “clean” urine—is there any truth to this or is that a “sport myth?”

Under USADA’s testing program, athletes do not have advance notice prior to being tested, thus it would be difficult for an individual to conduct this process before providing a urine sample.

14. What are the challenges of drug testing in the Third World? I’m thinking of notification, access to testing and other logistics of administering a drug test.

Some of the challenges include lack of resources and technology.

15. If I were notified this minute of an impending drug test can you walk me through what procedures I would need to follow?

The USADA pocket guide walks a person through this entire process step by step.

16. I heard one nightmare story where a woman was at her wedding and called for a drug test
and had to comply. Is there no wiggle room when it comes to getting tested?

An athlete is subject to testing 24/7, although I have never heard of someone being asked to provide a sample at their wedding. An athlete does have the right to request a delay with a valid reason, as outlined in the WADA Code.

17. How long does it take for a sample to be processed? And then who gets notified of what?

It takes approximately 6-8 weeks for a sample to be analyzed. The athlete will be notified directly by USADA if USADA has results management over the test.

18. How often can an elite athlete expect to be tested during a 10-year career? And when is the first test given?

An elite athlete who is in the Registered Testing Pool (RTP) will be tested a minimum of three times per year.

19. Where does the NCAA stand with all this testing? Do you work “hand and glove” with them? Or are there different procedures and protocols?

USADA tests many collegiate athletes who compete under the Olympic and Paralympic umbrella, but we are not the testing authority for the NCAA.

20. What common over-the-counter (OTC) products will test positive that most people are not aware of?

USADA’s best resource is GlobalDro.com where athletes can check the status of any medication. In addition, USADA’s Wallet Card shows commonly searched for ingredients that are prohibited on one side, and commonly searched permitted substances on the other side.

21. With the widespread legalization of marijuana happening throughout the United States how will this complicate your job?

Marijuana & Cannabinoids—Why are they on the List?

The WADA Prohibited List is the international standard for identifying substances and methods prohibited in sport. The List is updated annually, and a substance will be considered for the List if it meets any two of the following three criteria:

1. It has the potential to enhance or enhances sport performance.
2. It represents an actual or potential health risk to the athlete.
3. It violates the spirit of sport.

The annual decision to include or not include a substance or method on the Prohibited List is the responsibility of the WADA Prohibited List Committee based on current scientific and medical knowledge and the input from all stakeholders during an annual consultation process. Since the inception of the Prohibited List in 2004, marijuana and cannabinoids have been prohibited in-competition.

Why might marijuana and cannabinoids meet this criteria?

- Performance-enhancement: A common perception of marijuana is that its use impairs physical activity, including exercise performance. While the effects of marijuana can decrease hand-eye coordination and distort spatial perception, there are other effects that can be performance-enhancing for some athletes and sport disciplines. Cannabis can cause muscle relaxation and reduce pain during post-workout recovery. It can also decrease anxiety and tension, resulting in better sport performance under pressure. In addition, cannabis can increase focus and risk-taking behaviors, allowing athletes to forget bad falls or previous trauma in sport, and push themselves past those fears in competition.[1]

- Actual or potential health risk: A number of studies show that marijuana use may cause a variety of health risks. These risks include negative effects on respiratory, cardiac, and mental health. Frequent marijuana smokers can experience respiratory problems including more frequent acute chest illness and a heightened risk of lung infections. Marijuana use raises the heart rate by 20-100 percent shortly after smoking which can increase the risk of heart attack. Chronic marijuana use has also been linked to mental illness including paranoia and psychosis.[2]

- Violation of the spirit of sport: Negative values and ethics included in sport, and beyond sport, are considered in this criteria. Due to the illegal nature of marijuana in most countries, the use or abuse of marijuana does not exhibit the ethics and moral judgment that upholds the spirit of sport.[1]
22. How much of a problem are PEDs in the master's athlete (40+) community?

USADA posts all sanctions on our website and those announcements include the athlete’s age. This is a great place for people to see where the risk is. We do continue to see an increase in master’s level testing from some sports as more and more sports are investing in education and testing at all levels of competition.

23. I saw recently (January 2019) that a 90-year-old master cyclist failed a drug test after setting an age-group world record. Do masters athletes who test positive suffer the same consequences as the younger, elite athletes?

The rules are the same no matter the age.

24. What about the testing schedule for masters—are they only tested at competition sites? Do they have to undergo “out-of-competition” testing?

All members of USATF are subject to in- and out-of-competition testing. Athletes competing in USATF-sanctioned events may be subject to in-competition testing as well.

25. What about the youth athlete? Are there testing protocols that they are subjected to? Or does their first testing opportunity come when they are vying for a national championship or NCAA program? Aside from the ADHD drugs what are the problem drugs that are abused by youth athletes?

Youth athletes, just as masters athletes are subject to testing at any time if they are a member of an NGB.

26. Where do bans stand for coaches? I realize an athlete may get a two- or four-year ban but what about the coach that continually churns out banned athletes? What sanctions can they suffer? Who does that sanction come from?

Just like athletes, coaches and athlete support personnel can and do receive sanctions for anti-doping rule violations and can range from a public warning to a lifetime ban. WADA has a list of sanctioned athlete support personnel—https://www.wada-ama.org/en/media/news/2015-09/wada-publishes-global-list-of-suspended-athlete-support-personnel.

27. And also, the medical professionals. Oftentimes the banned drugs are given with prescriptions. Does USADA track where the illegal substances come from? Are the medical professionals immune due to their own licensing and prescription abilities?

USADA regularly works to investigate the source of doping or a positive test. Certain medical professionals are considered athlete support personnel and must comply with the anti-doping rules.

28. What is a “therapeutic use exemption” (TUE)? How does one get that?

In some situations, an athlete may have an illnesses or condition that requires the use of medication listed on the World Anti-Doping Agency’s Prohibited List. USADA can grant a Therapeutic Use Exemption (TUE) in these situations in compliance with the World Anti-Doping Agency International Standard for TUEs. The TUE application process is thorough and designed to balance the need to provide athletes access to critical medication while protecting the rights of clean athletes to complete on a level playing field. In order to apply or get more information about the TUE process, you can visit https://www.usada.org/substances/tue/.

29. What is the threshold for a TUE? I can remember a time when it seemed like every Olympic Gold Medalist was suffering from asthma.

Each TUE is evaluated on a case by case basis, as every athlete is different. In order to obtain a TUE, the athlete has to show that the medication is medically necessary, the use does not give a performance-enhancing effect, and the athlete has tried other medications (that are not prohibited) in the past that have not worked.

30. How long does the resolution of a case ending in conviction take? And does the ban that comes with a conviction include retroactive time from the date of the initial test? Or is that a negotiable issue?

Each anti-doping rule violation case is treated on a case by case basis in compliance with the rules and regulations, so resolutions may vary. Some cases can be resolved in a few months, while others can take longer.

31. Where does caffeine fit into all this? There is a ton of research on the enhancing effects of caffeine. I believe caffeine is the most
widely used drug worldwide.

In 2016, WADA initiated the Code Compliance Monitoring Program. Caffeine is not prohibited, but it is on the 2019 Monitoring Program for in-competition only.

32. How would it be determined that a drug should come off the banned list? Caffeine did this or at least the standards were greatly relaxed.

Under the WADA Code, a substance or method may be added to the WADA Prohibited List if it meets at least two of the following three criteria: It has the potential to enhance or enhances sport performance, it violates the spirit of sport, or it represents an actual or potential health risk to the athlete. Also, ADOs can submit suggestions to WADA for items to be added to or removed from the Prohibited List.

33. All drugs have an effective range. How is this range determined? This has been a point of contention that some coaches and athletes have “gamed” the system by using micro dosages of a drug possibly getting some benefit without slipping into the banned range of the drug usage.

This is determined by WADA.

34. I have a strong feeling that 100 years from now history will show the United States as a drug culture. We might not be comfortable with that characterization, but the U.S. has fueled the drug trade from Mexico and Central America which has accounted for over 150,000 deaths in Mexico over the last 15 years (according to Frontline). And the opioid crisis in the U.S. kills 70,000 annually which translates to almost 8 people an hour for 365 days a year. Given these realities what goes through your mind when you wake up in the morning and set out for another day’s work?

At the end of the day we want to make sure we do everything we can to protect clean athletes and elevate their voices. When we set out for a day’s work, we are asking ourselves what can we do for clean athletes today.

35. Are there any weird stories or strange cases that you’ve dealt with that are just too weird to make up?

One of our athlete presenters always tells the story of how his cat was prescribed a steroid medication, and his mother used the kitchen cutting board to cut the cat’s medicine in half. He jokes about how he was worried that it might contaminate his food.

36. If someone had further questions what resources are available to them (hotline, website, email or phone)?

For further information, you can visit www.usada.org or you can call Athlete Express at 866.601.2632. If someone wants to report a tip to our anonymous Play Clean tip line,
they can call 1-877-752-9253 or email playclean@usada.org.

37. I imagine since this is such a constantly evolving area there must be education programs to highlight the latest data and support systems. Do you present them to organizations, at clinics or conventions? How do you get your message out?

We publish an Annual Report and educate more than 12,000 athletes and athlete support personnel annually with updates about the WADA Code and anti-doping in general. The Olympic Education Team has presented research at the 2nd WADA Global Education Conference in Beijing, and we collaborate on an international scale to share ideas and resources. If you or someone you know would like to receive education, you can contact me at Thanson@usada.org.

Prior to any sample collection or testing, USADA provides extensive anti-doping education to thousands of athletes each year. USADA’s Education Presentation helps athletes and support personnel understand the goal of providing fair and honest competition, as well as their rights and responsibilities in regards to drug testing and what to expect from the drug testing process. Topics include prohibited substances, sample collection process details, including what to expect during a urine or blood test, how and if it is necessary to apply for permission to take a prohibited substance for medical treatment (therapeutic use).
Tammy Hanson currently serves as the Education Manager at the U.S. Anti-Doping Agency (USADA), where she oversees day-to-day operations of USA-DA’s education and engagement initiatives, driving strategic planning for the team, and developing effective education programs focused on athlete rights and responsibilities.

The 2020 Olympic Trials will be in Eugene, Oregon, at the new Hayward Field stadium. T&FN will be there with another great Trials tour. Trials dates are June 19-28. Sign up now for one of the major meets of the quadrennium. The tour price for the 2016 Trials (in Eugene) was $2450 per person, double occupancy, 11 nights. We expect the 2020 price to be a bit more. Current deposit requirement is still $750 per person. Don’t delay, not too much space left.

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Note: There may be other offers on amazon.com for used copies, but for the new, T&FN-authorized, pristine copies look for the entries with the above prices.
Coach Glover has achieved good success using a 3-point start for some of his sprinters. He sets out the whys and wherefores of this controversial starting technique for middle and high school sprinters.

**BY DONALD GLOVER**

Many sprinters and hurdlers in middle school and high school have difficulty generating enough power out of the crouch blocks (four point start), to maintain the proper angle during the “gun” phase of the start.

These words were published in the *Athletic Journal* in May of 1984. The article was written as an attempt to promote the use of the 3-point start for some athletes in middle school and high school. I am the author of that article, which was entitled *Stand up Starts*. The article was written because, at that time, I taught weight training in Physical Education and also coached track & field at the senior high level. This combination of duties, gave me the opportunity to observe the huge discrepancy in strength and coordination between an average 13-year-old boy/girl sprinter and a trained 18-year-old male/female sprinter.

The untrained 13-year-old boy just coming out for track usually can bench press about 50% - 60% of his body weight. A 13-year-old girl just coming out for track can probably bench press 30% - 60% of her body weight; however, trained 18-year-old boy/girl can bench press as much as 70% - 90% of his/her body weight.

I am estimating this based on observation and experience. The question I kept asking myself at that time was: If there is such a wide margin of strength and coordination between these two genders and age groups why do we train and teach them the same way to start a sprint or hurdle race?

The 1984 article did not shake up the track sprinting/hurdling world as much as I had envisioned, so I am going to add to it 35 years later.

Back in the seventies, I coached men’s track. One of my best sprinters was a tall gangly young man who could not generate enough force to come out of the crouch start smoothly. I decided to experiment with him and we tried the standing start. We did repeat 30-meter sprints on several different occasions. During these trials he did three starts from the crouch (four point start) and three 30-yard sprints from the standing position. Over a period of three weeks and 12 total starts from each position he proved to be consistently faster from the standing start position.
Years later I tried the standing start with another sprinter and he consistently turned in faster times than with the crouch start. These were the only two senior high school boys that I thought could benefit from the stand. The rest of the sprinters during that time did well with the 4-point start. Although the 4-point starts are far more common among elite sprinters, some believe the standing start may have some merit. A 2001 study conducted by the University of San Francisco found that the "standing start technique allowed athletes to reach a top speed faster and maintain it longer than crouched starting positions." (by Steven Kellicer, Standing Start Techniques in Sprinting, AZCentral).

However, I hesitated to use the standing start as the years went by as it seemed to be quite unstable and even though some sprinters may have benefited from it I was afraid of false starts and was overly cautious about using it. Years later I took over the women’s hurdles coaching position on the local high school team. Many of my athletes had trouble using the 4-point start and I was still afraid to use the standing start. So, we again experimented and this time we tried a 3-point start. This start proved to be much more stable and the difference in the first step out of the blocks was significant. The 3-point start first step was consistently farther from the starting line than the first step using the 4-point start. Some other benefits of the 3-point start that we discovered were:

- Much easier to learn
- Much more comfortable in the “on your mark” and “set” positions
- Front drive leg much closer to the starting line
- First step at least a foot closer to the first hurdle
- Easier and quicker to get into the proper running angle.

Most of my hurdlers at that time preferred the 3-point start. However, at that time, there were not many commercially built 3-point starting blocks on the market. We only had one 3-point block and eight out of the twelve hurdlers wanted to use it. Not a good use of time standing around waiting for a turn. The answer to our problem was to make our own 3-point blocks.

Luckily, a good friend of mine was the metal shop teacher so, I gave him a design and he built two 3-point starting blocks. These blocks were great, the girls really took to them and most were consistently the first hurdler to the first hurdle. In fact, the first year we used our homemade 3-point blocks one of the hurdlers went to state. The officials at the state meet would not allow us to use these strange looking blocks; however, she still competed at state using the 4-point start and placed 6th. Luckily, she was a junior, so, the next year we cleared our homemade blocks before the state meet and she was allowed to use them. She won and set a school record in the 100 meter hurdles.

Recently I conducted another speed trial using the traditional 4-point block and a commercially made 3-point block. All the test trials I had conducted in the seventies were with hand-held watches and were far from scientific. This time I used electronic timing and used six female sprinters/hurdlers. Some were experienced some were younger and did not have much experience. Each girl received six starts – three starts with the 4-point start and three starts with the three-point start. Five out of the six girls were faster using the 3-point start. Again, this trial would probably not conform to rigid scientific standards but it further convinced me that the 3-point start is a viable option for many.

I have always been interested in teaching young athletes new skills. I know the athlete has to understand the make-up of a skill and then have plenty of practice time in order to gain increased proficiency. In many sports, equipment modifications are made to accommodate the developing strength and skill of youngsters. We need to make the same developmental process available for our track athletes. I believe the 3-point start is better for some and I believe the 4-point start is better for others.

However, I also believe the 3-point start can be a developmental transition process toward learning the 4-point start. When an athlete is developmentally ready through strength gains and increased coordination they can easily transition to the 4-point start from the 3-point start.

Most track programs function now putting everyone in the 4-point start because that is all they know or that is the way the Olympians start. The objective of sprinting and hurdling is to get from point A to point B as fast as possible. Using the 3-point start will allow some of our developing athletes get to point B faster. However, many coaches will not use the 3-point start because they have not had any experience with it and do not feel comfortable teaching it. The following starting routine and
pictures may give coaches a better insight into the ease of teaching the 3-point start.

• Use of the 3-point blocks allows the athlete to start much closer to the starting line. (see Figure 1—Notice the front pedal with the smaller block is much closer to the starting line).

• The athlete on the right pictured in Figure 2 places her front block pedal one fist and two fingers away from the starting line. The front rest arm is placed the same way a 4-point starter places both their hands.

• Our 3-point starters do not need to use a rear pedal. It is entirely optional for our athletes. We tell our runners to concentrate on getting the back foot forward as quickly as they can—quick like a karate kick. If you use a rear pedal the distance between the blocks is about one-foot length.

• On the “take your mark” command our hurdlers are instructed to walk to the front of the block and place the drive foot on the pedal, the toes are not fully placed on the block and partially flatten on the track. The athletes will have to experiment with this in practice to find how much of their front foot on the track feels comfortable to them—See Figure 2.
athlete that comes to that position—See Figure 3.

- We instruct our athletes to lower the hips by bending the knees, then lean forward and put the front arm down behind the starting line. (See Figure 3.)

- The opposite arm (the drive arm) is placed alongside the 3 point starters hip. See Figure 3.

**THE SET COMMAND**

- On the “set” command the 3-point starter raises the elbow of the drive arm and at the same time rolls a bit forward so both the support arm and toes of the front foot are supporting more weight. The athletes are instructed to roll forward slowly into “set” and go as far as comfortably possible (see figure 4). The 3-point starters feel like they are going to fall forward into a run.

**THE GUN**

- When the gun goes off the athlete is instructed to thrust the drive

Notice the first step for the 3-point starter is much farther from the starting line than the 4-point starter (see figure 6)
arm forward vigorously and bring the back leg through quickly. We tell our athletes to bring the back leg through as quickly as a karate kicker. The athletes focus on getting a good drive angle out of the blocks. Our starters feel this angle is much easier to achieve in the 3-point blocks. See Figure 5. (The 2 outside lanes are the 3-point start, the middle lane is the 4-point start. The runner in lane 4 is a distance runner and has limited experience with blocks—but she does quite well for the first time using the 3-point start.

Many coaches will not agree with this article but, many coaches may consider using this start, especially coaches who believe the 4-point start is not the best start for all sprinter/hurdlers.

What do you have to lose by trying the 3-point start?

Donald Glover has coached track and cross country for 40 years, first as an assistant at Winona HS in Minnesota in 1967, and then track assistant at White Bear Lake HS (MN) in 1969. In 1972 he became head track and cross country coach at Mariner HS in White Bear Lake; he continued as head cross country coach until 2000, and in 2002 took over the track and cross country programs at the University of Wisconsin-River Falls, continuing in that position until retirement in 2009.
Prepared to Travel

The impact of travel on performance is a growing focus of research for sports scientists. This piece discusses some of the latest findings. This article first appeared in Athletics Weekly, 9/7/2017

By Peta Dee

Joint stiffness, dehydration and sleep deprivation, loss of appetite and a body clock sent haywire. These are some of the common side effects of long distance travel and yet, according to sports scientists, they are factors often overlooked by the growing number of athletes making lengthy journeys to training camps and competitions.

Reporting in the Strength and Conditioning Journal recently, a team of researchers from the sports and exercise departments of the University of Gloucestershire and Birmingham City University described how many athletes travel with little planning for the potential impact it might have on their physical and mental well-being. Although many of the unwanted side effects of long haul flights are impossible to avoid altogether, a better understanding of the precautions that can be taken can only bring benefits.

“Minimizing the potential decrement in athletics performance caused by travel requires comprehensive management by athletes and coaches,” writes Richard Clarke, a senior lecturer in strength and conditioning at the University of Gloucestershire.

“But awareness of the fundamental mechanisms of fatigue associated with travel and implementing recommended coping strategies can provide favorable outcomes.”

So what can be done to alleviate the problems?

Avoiding Sleep Deprivation

“Sleep deprivation can have negative effects on athletics performance,” Clarke says. “And it can occur both from sleep loss on overnight flights and from jet lag.” Preflight practices such as adjusting bedtime by 1-2 hours for 1-2 days before travel are recommended so that you partially adapt to a new time zone. “If possible, plan early morning or afternoon arrivals which will enable the next night’s sleep sooner compared with evening departures and early morning arrivals,” Clarke says.

“And to reduce the negative effects of travel, get as much sleep as possible on the plane.” Keeping the cabin window shades down and turning off the overhead lights until an hour before arrival are recommended. “Avoiding caffeine and too much food and brain stimulating activities will reduce travel fatigue,” he adds. If you have travel fatigue on arrival, Clarke suggests athletes adopt a napping strategy.
“Naps of less than 30 minutes are not susceptible to sleep inertia, the fatigued state you can experience upon waking from longer sleeps,” he says. “Short naps have also been reported to improve alertness and cognitive performance following restricted night time sleeps.”

COPING WITH JET LAG

Our human body clock works roughly to a 24-hour cycle and is controlled by a master clock in the brain. But it’s also influenced by peripheral clocks in other parts of the body that respond to cues such as changes in light and dark.

Changing the schedule of daylight and darkness confuses the pineal gland in the brain, which produces sleep hormones such as melatonin. Clarke and his team suggest different coping strategies depending on how long you are staying in a destination. If the length of your stay is short - less than three days - they suggest sticking to the patterns of your original ‘home’ time.

“Because the normal cycle of the human circadian rhythm is slightly longer than 24 hours, we have a natural tendency to accommodate lengthening of time zone (westward travel) than shrinking (eastward),” Clarke writes.

At least one day per time zone should be allowed prior to intense training or competition to allow for re-synchronization of the internal body clock, studies show.

CONSUME CHERRY JUICE

Professor Glyn Howatson, a researcher at the sport, exercise and rehabilitation department of Northumbria University, discovered that tart-tasting Montmorency cherry juice significantly increases the levels of melatonin in the body, the hormone which regulates sleep, and may help to prevent jet lag.

ON A FLIGHT, THE AIR CIRCULATED IN CABINS CAN BE AS DRY AS THE SAHARA

His research showed that when participants drank cherry juice for a week there was a significant increase in their urinary melatonin (15-16%) compared with control condition and placebo drink samples. “On long haul flights crossing more than 3-4 time zones, I would be inclined to take it just before you fly to promote sleep on the flight and then when you intend to rest or sleep at the destination take again about an hour before,” Howatson says.

“A good number of athletes are now routinely using cherry juice to overcome jet lag when traveling to competitions.” A dose of 30 ml of cherry concentrate is recommended.

TRY COMPRESSION CLOTHING

Studies have linked lower leg compression garments with less discomfort through prolonged sitting in a cramped position and a significant reduction in blood pooling. Using electrostimulation, or Tens equipment during and after a flight might also be helpful. “Recently, nerve stimulation has also been looked at and has been shown to increase blood flow to the lower leg,” Clarke says.

“Naps of less than 30 minutes are not susceptible to sleep inertia, the fatigued state you can experience upon waking from longer sleeps,” he says. “Short naps have also been reported to improve alertness and cognitive performance following restricted night time sleeps.”

PLAN YOUR NUTRITION

On a flight, the air circulated in cabins can be as dry as the Sahara, increasing the risk of dehydration. Figures from the Aerospace Medical Organization recommend drinking around 225 ml of water for every hour in the air, but you might need more. To avoid the risk of gastrointestinal disease, Clarke urges athletes to “avoid drinking local water, including ice cubes and water for brushing teeth, and the consumption of raw foods or those that might have been washed in water”.

Scheduling meals on your flight to eat in sync with your new time zone can determine how well your body clock adjusts. A recent study by Dr. Jonathan Johnston and Dr. Sophie Wehrens, chronobiologists at the University of Surrey, recruited 10 male volunteers. Each participant was given breakfast 30 minutes after waking, and then had lunch and dinner at five hour intervals. Immediately after they had eaten each meal, the participants had blood samples and fat biopsies taken in the special laboratory that simulated in-flight conditions— there was dim lighting, limited physical activity and no sleep—and allowed the
researchers to keep tabs on their body clocks.

For the second stage of the trial, the experiment was repeated but with breakfast provided five hours after the subjects had woken instead. Results, published in the journal *Current Biology*, showed that moving mealtimes forward by five hours delayed changes to the rhythms of blood sugar by the same amount of time.

“We think that changing the meal times reset some peripheral clocks without affecting the master body clock,” says Johnston.

**MANAGE LIGHT EXPOSURE**

When arriving at your destination, depending on the timing, exposure to bright light (especially natural light) can be helpful in resetting your circadian rhythm, or body clock. Clarke explains that secretion of the sleep hormone melatonin is slowed on exposure to bright light and increased during darkness.

“Allowing or restricting light exposure would seem an ideal way to manipulate melatonin secretion to suit the circadian phase,” he says. Some researchers have shown that fluorescent and blue light can be used to suppress melatonin as they stimulate the same environmental responses as daylight.

Others have recently shown how intermittent transcranial light therapy, where bright light is shone through the ear canal for 4x12 min a day has a positive effect on jet lag symptoms after cumulative days of treatment. However, it is the timing of light exposure that’s crucial and eastwardly travellers crossing several time zones should consider dark ‘blue blocker’ goggles to reduce exposure to light and boost melatonin secretion, the study found.

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Adrenalin—it can help the runner. . . or hinder.

It seems to happen with the regularity of a full moon. You flick on the TV and there is a car chase leading the nightly news. The driver seems to break every rule they taught you in driver’s ed—high speeds, red lights run, wrong way travel and almost predictably a car crash to end it all. If time allows you get the slow-motion replay that makes one's head shake and spurs a universal thought—what were they thinking? As it turns out—not much. Scientists have studied this bizarre behavior and found that the adrenalin rush of the chase raises the heart rate to astronomical levels, well above 145 beats per minute. This causes a physiological reaction in the body where the blood is shunted (redirected) from the cerebral cortex portion of the brain.

The problem is that shunting the blood from the cortex may effectively shut down that area of the brain that includes logical thought, reason and judgment. The shunting of the blood and the possible diminution of mental functions can foster a more primitive, simplistic and instinctual “fight or flight” response.

Interestingly, the shunting of the blood can affect the chaser as well as the chasee. The surge of adrenalin in the police officer, with a subsequent loss of reason and judgement has been seen as one of the reasons police officers revert to excessive force that has been recorded on dash-cams or gone viral on YouTube. Once the heart-rate zooms humans begin to exhibit behaviors that are embarrassingly not-so-human.

So what does this have to do with competitive athletics in general or running in particular? Depending on your training philosophy, be it tempo runs, zonal training, intervals or H.I.T., one of the goals of each of these methods is to crank the heart rate above 145 beats per minute to get a desired training effect.

Fortunately, in a controlled training environment we don’t see people going wild during or after an interval workout but what you might notice is a subtle lack of inhibition that does follow a hard workout or race.

From a spectator’s viewpoint one can observe the effects of crossing this 145 barrier in the later stages of a track race, particularly (but not exclusively) with novices. The runner enters the last lap of a mile and suddenly he takes off. The runner has started his other kick 60-70 seconds out which proves to be both a distance and pace one cannot maintain, leading to stretch drives that are painful to watch.

One would think these runners would “learn from their mistake,” but the opposite is often the case.
They have developed a pattern (an unthinking one) that although untenable becomes their default pattern which can be difficult, if not an impossible habit to break for both the athlete or coach.

If one truly understands the shunting business and the possible loss of the higher cognitive functions it no doubt dawns on you that we all become a slave to our lower, instinctual behaviors. While this statement may be generally true it is not necessarily a point of despair.

One of the goals of training is to automate behavior. This means to make certain actions and movements automatic, make them our default mode of movement. This has several advantages. Most importantly, this instinctual movement pattern does not require thinking nor does it require the involvement of the higher processing functions of the cortex.

The advantages of this should be obvious. You get into the later stages of a race, your heart rate begins to skyrocket but tactically you still do the right thing; you compete, as opposed to blindly charging ahead at an inopportune time and die in the stretch.

The goal then becomes to develop automatic behaviors. This part is not so simple. It takes forethought, planning and a diligent attention to detail. Fundamental movement patterns such as arm actions, knee lift, foot placement combined with using visual cues (a marking on a track, a tree or rock in cross country) can be used to cue subsequent actions. These actions need to be practiced again and again, day-in and day-out until the desired actions become unconscious. They become the way you move. Think of how Bruce Lee could defend himself with his martial arts discipline.

Concurrent with these deeply ingrained movement patterns is the adoption of a training philosophy regarding “training to failure.” There is a recurrent, generational thought within the coaching profession that is supported with pithy maxims such as “no-pain, no-gain” and the necessity of giving 110% effort. Unfortunately, these sentiments are often a cover for coaching insecurity or overpreparation, ultimately resulting in overtraining.

Training to failure is training to fail. When running form, a desired, coordinated movement pattern begins to break down one is no longer practicing productive movement skills. One is practicing “bad habits” which in “the heat of the moment” (read this as: heart rates above 145 beats per minute) become the patterns that are practiced, learned and used. Therefore, it becomes incumbent that one “practice what you can do, not what you can’t.” i.e. don’t train to failure.

Automatic actions can be learned with forethought, time and practice, practice, practice. Training to failure subverts the process. For the recreational runner this is not much of a concern, but if competitive performance is one’s goal attention to this training goal will pay dividends come race day. And if by chance on the day of the meet you see flashing lights in your rearview mirror—pull over.

They have developed a pattern (an unthinking one) that although untenable becomes their default pattern which can be difficult, if not an impossible habit to break for both the athlete or coach.

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# 2019 Calendar of Schools

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

## Level 1

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<tr>
<th>Date</th>
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<th>Location</th>
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<td>May 18-19</td>
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<td>Allen, TX</td>
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<tr>
<td>May 25-26</td>
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<td>Clermont, FL</td>
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<td>May 31-June 1</td>
<td>Christian Brothers High School</td>
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<td>June 7-9</td>
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<tr>
<td>June 7-9</td>
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<tr>
<td>June 8-9</td>
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<td>July 19-21</td>
<td>Johns Hopkins University</td>
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<td>Nov 15-17</td>
<td>Life University</td>
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<td>Nov 16-17</td>
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<td>Nov 23-24</td>
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<td>Dec 21-22</td>
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Applications for the first USATF Level 2 School of 2019 are now open. The four-day program heads to the northeast, July 9-12 on the campus of St. John’s University, Queens, New York. Coaches possessing a current USATF Level 1 and a minimum of three years of track & field or cross country coaching experience can choose from one of six broad event disciplines (Sprints/Hurdles/Relays, Endurance, Jumps, Combined Events, Throws or Youth Specialization) to study in-depth throughout the week. Combining applied sports science, instruction from some of the nation’s top coaches, practicum on the track and a comprehensive event manual dedicated to the entire event discipline, the course is designed to provide a coach the knowledge to greater implement individualized training programs and ability to better evaluate performance and provide cues to improve athlete performance. The course is a must for any coach looking to elevate their knowledge or professional rank.

Applications for the St. John’s Level 2 offering will be accepted through May 24 or until capacity is reached in the event discipline. Dates and locations for additional USATF Level 2 School opportunities in 2019 will be forthcoming to the Calendar of Schools.

Learn more about the USATF Level 2 School and this offering at USATF.ORG/LEVEL2.

The fourth iteration of the USATF Cross Country Specialist Course is slated for June 28-29, 2019 with formal location announcement by early April. Legend and world-class distance coach, Dr. Joe Vigil, and veteran distance coach and coach educator, Scott Christensen, return as the lead instructors.

The 12-hour course features technical classes, laboratory training sessions, cross country specialty drills, periodization training for the cross country season, team building strategies, and long term athlete development for the endurance runner. In addition to the classroom and laboratory time, coaches will participate in interactive discussion sessions featuring a coaching panel of special guests.

The Cross Country Specialist Course is your opportunity to learn the theory and skills that has produced High School State Championships, over six NCAA Cross Country Championships, and IAAF World Cross Country Champions. All coaches who satisfactorily complete the course will be awarded a USATF Cross Country Specialist certificate, which meets the new Education Standard requirement for the USATF Coaches Registry.

Registration for the Cross Country Specialist Course is expected to sell out for a third consecutive year. Watch for registration information to be added to the online Calendar of Schools soon.

Current high school, club, college and professional coaches who have had success coaching athletes at the state, national or international level are invited to apply for this prestigious and highly selective three-day camp open to all broad event groups (Sprints/Hurdles, Endurance, Jumps OR Thows). U.S. Emerging Elite coaches selected to attend and participate will learn from USATF master coach educators along with USATF’s resident coaching staff at the CVEATC. The camp is designed to inspire and aid the education of elite high school, club and collegiate coaches toward being among the nation’s finest developers of current and future TEAM USATF athletes.
Selected Emerging Elite Coaches will:

- Attend and observe all classroom and field sessions in respective event group
- Participate in informal discussions before/between/after sessions with USATF Master Coaches and resident coaching staff
- Receive all camp handouts and complete follow-up evaluation

Criteria for Selection:

Coaches will be selected based on their proven abilities to develop athletes in their respective event(s) to State/National levels, and their projected potential to develop future TEAM USATF Olympic, World Championship and international team athletes and medalists. All coaches must be members of the USATF Coaches Registry Program prior to attending the camp.

Coaches selected are responsible for travel expenses and camp fee that includes tuition, onsite accommodations and meals at the CVEATC. Coaches should only apply if they can arrive onsite by 1:00pm, June 24th and not depart until after 12pm, June 27th.

Applications are available under the Special Programs on the online Calendar of Schools.

USATF COACHING ENHANCEMENT GRANT

USATF is pleased to offer the following grants for the 2019 year to assist coaches in opportunities to enhance their professional growth by either shadowing a USATF Master Coach or earning USATF certification.

National Championships Mentorship Grant

**Location:** Des Moines, Iowa  
**Date:** July 25-28, 2019  
**Application Deadline:** May 17, 2019

This unique mentorship program will provide an up close and personal experience of the strategies, meet prep, mental preparation and “in the moment” coaching for an emerging elite coach in a chosen event. The grant recipient will shadow one of USATF’s Master coaches through the rounds and final of a chosen event. A group administrator will lead rap sessions after each round to discuss the grant recipients’ experiences.

**Grant:** Four (4) $900 grants are available towards travel expenses. Coaching credential to be included.

**Criteria:**

- A coach cannot have an athlete competing during the designated dates of the Mentorship.
- A current coach who is either a head High School Coach for 8 years or a college assistant or head coach for minimum of 5 years.
- Has coached an athlete at the Junior or Senior USATF Outdoor Championships in the last five years or coached a high school athlete at the State Championships.
- USATF Level 2 Coaching Education certificate in any of the event disciplines.
- Member of the USATF Coaches Registry
- Two paragraph position statement on the value of attending the mentorship, submitted with application.

Emerging Female Grant

The Emerging Female Grant is provided by USA Track & Field, and provides a select number of minority, women track and field coaches the opportunity to attend USATF Coaching Education courses during the 2019 calendar year. Applications are accepted until funds are depleted, and early application is advised.
Criteria:

• Be a current member of the USATF Coaches Registry
• Provide a resume of coaching background/experience
• Provide a letter of recommendation or three references

Master Coach Fall Mentorship

Location: Chula Vista Olympic Training Center or a designated High-Performance Training Center where a Master coach is in residence.

Date: Fall Training season, October – December 2019

Application Deadline: July 31, 2019

Four (4) emerging elite coaches will be awarded up to $800 towards expenses to visit on location a Master Coach to observe for 3 days of “on the field” routine as Fall training begins for the elite athlete. Locations to be selected: Chula Vista OTC; Los Angeles, California; Bradenton, Florida; Manhattan, Kansas; Eugene, Oregon. Applicants can request a Master Coach who must be approved by the Chair of the Coaches Advisory Committee.

Criteria:

• Member of the USATF Coaches Registry
• Level 2 Coaching Education Certificate in event being requested
• Current high school, college, or professional elite coach
• Application to include a brief statement of how you can use the information
• Complete coaching resume submitted at time of application

REMINDER: SUBMIT VERIFICATION FOR THE NEW EDUCATION STANDARD TO THE USATF COACHES REGISTRY

The Education Standard is now in effect for the USATF Coaches Registry. All coaches seeking benefits and privileges of the USATF Coaches Registry must submit their approved course of education or body of work for verification at the online application link below.

http://usatf.meetregister.org/Education-Standard-Verification-App

Approved applications will receive a printable verification card and appear on the Education Standard List (with green check mark). To satisfy all requirements of the USATF Coaches Registry, you must also appear on the USATF SafeSport List.

Please read the list of accepted courses of education, accomplishments and instructions carefully when submitting an application and note the following:

1. Coaching certifications and career achievements attained will NOT automatically import to the Education Standard List and a verification application must be submitted.
2. Based on option selected, “Year Completed” or “Year/Period” and “State Completed” or “Athlete/Team/Employer” fields must be completed in entirety or an application will be marked INCOMPLETE and not reviewed.
3. Do not upload SafeSport Training certificates or Background Screen results to your Education Standard application.
4. Online option Path 1 – E requires completion of TWO courses (NFHS Coaching Track and Field AND any sports science course on USATF Campus) and certificates for both courses should accompany verification application.
5. If using 10-year employment history (Pathway 2 - option g), employment verification letter on school letterhead stating dates of employment, position title, and signed by human resources or athletic director must accompany your application. Failure to include will result in denial of application.

For additional information or questions contact coachesregistry.verifications@usatf.org.
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