Dennis Mitchell
2023 Nike Coach of the Year

TRACK COACH

2024 / ISSUE 246

TRACK COACH

Winter 2024 — 246

The official technical publication of USA Track & Field

TRACK COACH

FORMERLY TRACK TECHNIQUE

246 — WINTER 2024

The official technical publication of USA Track & Field

USATF

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PUBLICATION

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

Spring 2024 issue (No. 247) e-mailed to subscribers in April 2024.

SUBSCRIPTIONS

$19.95 per year, U.S. or foreign. Track Coach became a digital-only publication in 2015. Track & Field News subscribers get free access to all Track Coach articles. See www.trackandfieldnews.com. Click on "subscribe"

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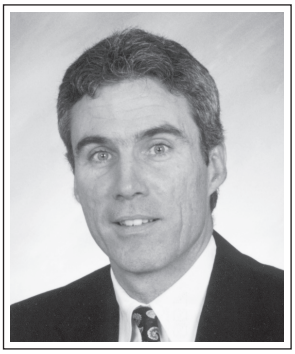
FROM THE EDITOR

RUSS EBBETS

THE PETER PRINCIPLE



The Peter Principle (by Peter Laurence and Raymond Hull) was all the rage when it was published in 1969. It was a New York Times #1 bestseller and over the course of its first three years went through 17 editions. The Peter Principle was a cleverly written parody of a scholarly examination of leadership in a hierarchical structure that characterizes most organizations. These hierarchical structures could be in business, education, manufacturing or the military. The basic premise, repeated again and again, was that all management and leadership rises to a level of incompetence, everywhere.

I was introduced to the book in a poly sci course. My professor was enamored with the book. Schenectady, NY, at that time, was transitioning from a city manager form of municipal government to a strong mayor, elected by the people. The city manager was an educated professional trained for years in the nuances of running a municipality that offered residents a safe, affordable and wholesome living environment.

The strong mayor concept was closely tied to a "political machine," with Richard Daley (Chicago) and Erastus Corning (Albany) being America's two best examples. Both those cities ran smoothly and were generally seen as exceptions. The strong mayor concept was run by a silver-tongued politician, schooled in politics and usually lacking in the nuances of municipal government. The concept was always tied to patronage, cronyism and back door dealings. To the delight of my poly sci professor this produced a weekly stream of shenanigans as Schenectady's governance proved to be a classic example of the Peter Principle in action.

Collegiate track & field has grown to a level of bureaucracy. Maybe we are one step behind football's "coaches for coaches" set-up but any large program can now boast a staff of discipline specialists headed by a director of track & field and an associate head coach. Many staffs include an academic advisor, strength coaches, healthcare support and recruiting coordinator. Also on the list would be someone for compliance, psychological services, travel and transportation and most recently someone to coordinate NIL affairs. The organizational chart has become a pyramidal Rubik's Cube.

Long gone are the hunter-gatherer days of coaching track & field. The old-time staffs

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EDITORIAL COLUMN

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of two broke things down with a simple—"I'll do this and you do that," and somehow things got done. Be it a day, a week or a season, there was no place to hide. If you, or #2 didn't do it—it didn't get done.

The evolution of today's coaching reality, to a hierarchical status, can be argued from either side of the better or worse continuum. But at the end of the day a more productive result is to capitalize on the "what is" and strive to make the "what is" better.

We all know that in a larger organization, goal achievement may not be so coordinated. Everyone brings strengths and weaknesses to the table. Other baggage includes abilities, motivations and aspirations. Coordinated accomplishment then becomes the difference between a dynamic situation and one characterized by Peter as a "regression to the mean," (i.e., mediocrity).

Suggested solutions are easy to come by, with implementation, not so much. The age-old activity of setting goals and agreeing on the means to accomplish them can look good on paper but that is no guarantee anything good will happen. Granted, goal setting is the first step, but taking action and completing steps 1-2-3 to the end is necessary to complete the whole process. And with the burgeoning staff sizes there are now numerous places to hide, coast and prove Peter was right all along.

I pretty much resisted the urge to "move up" throughout my coaching and teaching careers. That early poly sci course left a lasting impression. I always questioned myself—why am I doing this? And secondly, will I be able to make things "better?" While some of the offers were enticing, with more prestige and more money, the offers never seemed to balance the scale as far as swallowing a consistent level of frustration, aggravation and pointless meetings that were collectively enough of a turnoff to generate a polite, "No thank you."

And anyway, I always thought, "What is the problem with doing a great job where you currently are?" Isn't there life satisfaction and a benefit to the greater good in the knowledge that you know what you are doing and doing what you know? Whether it be teaching or coaching there is the opportunity to help dozens, if not hundreds of people reach their goals. There was always the possibility to tweak an old way or try something new and at the end of a season or semester look back with a critical eye to see what worked or what helped someone on the road to their potential.

Peter Laurence quotes the poet Alexandar Pope as saying that one's pleasure and joy of life lies in "health, peace and competence." The Japanese champion a concept called *kaizen* which roughly translates as continuous improvement. It is a nice idea and would serve either group of individuals be they those with the ambitions of power, promotions and prestige or those who have simply found success in their niche and desire to make their little corner of the world a better place.

INTERVIEW WITH DAN PFAFF

Forty questions for coaching guru Dan Pfaff. Pfaff has had a long distinguished career in coaching at all levels. As his website indicates, he has coached 49 Olympians (including 1996 100 champion Donovan Bailey), five world record holders, and 29 NCAA champions. He is currently the head coach of the Altis coaching education organization.

BY RUSS EBBETS

1. What have you been up to lately?

Semi-retirement finds me busier than ever. Advising dozens of athletes and high performance (HP) staffs on running, COD issues, return-to-play (RTP) programming along with the normal workloads with the Altis group. Doing some really cool work on artificial intelligence (AI) and machine learning for kinematic analysis, the Vuemotion Project.

2. Who have been some of the greatest influences in your life in terms of developing your coaching thoughts, innovations and philosophies?

I am a product of various coaching education programs and layers of diverse mentorships. Dozens

Dan Pfaff

of coaches in a variety of sports around the world have had major influences in all of the above. Mentorships and networks have evolved into layers of influence.

My father was a farmer and construction crew lead so he was first and most powerful mentor. Generalist background critical in those occupations along with the need to build expert networks. Tom Tellez was my main athletics mentor. I stalked him for years on the speaker circuit and eventually spent two years as a graduate student under him. Consummate educator, biomechanist and programming genius.

Victor Lopez was a fellow grad student and he exposed me to European and Caribbean methodologies along with the art of coaching.

Bjorn Bloomberg from Sweden was another pillar exposing me to Eastern Bloc ideologies and the history of sports training.

3. Altis—what are some of the fundamental principles you are trying to impart to your coaches?

For me it begins with an ergonomic analysis of the sport, truly gasping all components that influence wellness and sporting excellence, a deep dive into the history of what has been tried before and a curious mindset with limited ego.

4. What role does artificial intelligence play in coaching and how do you foresee this changing in the coming years?

I think it is early days and we must always understand garbage in, garbage out issues with any AI or machine learning. For example we ran over 10,000 athletes through our matrix to just define ground support dynamics and then challenged these findings against various other gold standard methods.

5. What kind of testing do you use? Are these tests basic for all disciplines in track & field athletes?

Early in my career I did a lot of testing but noticed results were not supporting desires and often struggled with reliability indices and stat analysis. So now I test in situ so to speak. We measure various menu items during the training process at various times and with a variety of tasks. In general, we use various running tests, jumping tests, throwing tests and some weight room exercises. Fatigue tests are sport specific and require a lot deeper exploration.

6. Do you do much with nutritional profiles? Is this done with "pencil and paper" surveys or do you have blood drawn to look for nutritional deficiencies? If so, who does the draw? And what markers do you look for?

It depends on financials, needs of the athlete, expert support and compliance skills of the athlete. My question is always how granular do we need to get to make an informed decision? If one doesn't eat breakfast, eats fast foods for lunch and then overeats at dinner, I don't think lab profiles will give you much insight for corrections. I often ask athletes to record a complete fluid/food diary over 3-5 days to see if there is any first principle items we can tackle.

7. Individual sport athletes are notorious for overtraining. How do you monitor this?

It is a recording, debrief and educational process. One must have metrics for all training menu items and recovery methods to make first layer decisions on this. Volumes, intensities, density of items in a time frame are first layer metrics in the main. Often, we are a bit locked in with volume and intensity, so density is really the main tool for modulating loads. We also must look at outside load factors for these often hamper recovery. Load management is a complex topic and the more we try to monitor and adjust, the more confusing the variables become.

8. Again, do you use blood work to monitor this? And if not, how is this monitored—with an athlete's visual presentation or something as simple as a vertical jump?

If an athlete has finances and a support system, then we use all sorts of blood, urine, stool, follicle and saliva markers for a variety of neurotransmitters, immune/hormonal relationships and catabolic waste markers. For those with limited resources, we have norms on every menu item in the training plan and watch for trends on output measures within those items. We have maps for how these change during the training year and with stages of development. If we see a sharp change in these metrics, then [it's] time to adjust load factors.

9. How much credence do you put in the thought that the athletic genius (a world record holder or someone at the top of his game) "knows" what training is best for them? As a coach, when and how do you intervene? Do you have a real life example of this?

I sincerely doubt any athlete we identify as genius has not had folks guide, advise and educate on the journey. Once at the top, if the educational process was sound, the athlete has then earned the right to influence programming. I have always looked at my role as that of a gate keeper, a director of the team around the athlete. All parties are heard and valued but that said, one must have the chops to contribute.

10. With Donovan Bailey—what was his week before the Olympics in Atlanta (1996) like? It was not great, he injured four adductors in a race a few weeks before the Games so we spent the last 14 days of prep doing around-the-clock therapy interventions and plan B training.

11. I read somewhere that Bailey was unaware of Linford Christie's disqualification due to two false starts—was this true?

No, but we had planned and rehearsed strategies for dealing with unexpected distractions. He

was prepared for chaos.

12. What was your coaching mindset through the rounds? What advice or observations did you share with DB?

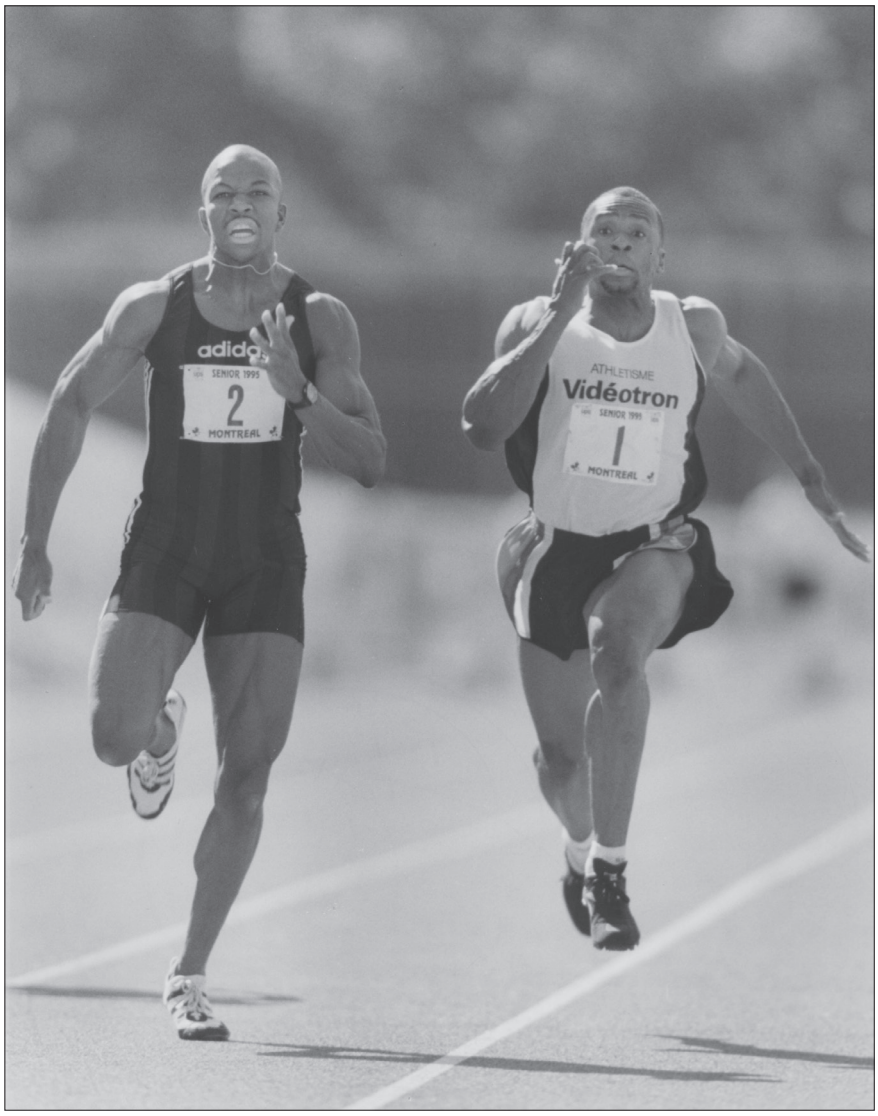
With the injury we were managing, running mechanics were paramount. DB had to control his front side mechanics and ground dynamics or we were going home empty. I spent most of the time directing therapy inputs and pushing mental skills for coping with the situation. Another puzzle was what to do in warmups for each round for normal schemes were deemed too risky.

13. What type of recovery did he do? Canada generally has an excellent healthcare support system – did you use their services or your "own people?"

We had a very good outside team around DB, the group had been with him for almost two years then. The federation gave grudgingly us support. Various soft tissue, acupuncture and diet strategies were used. Sleep was huge also. We had a private house so controlled things well in my opinion.

14. With Altis you do much in the way of coach training and preparation. What are some basic fundamentals you'd recommend a young coach master at the start of a career?

Developing a background in training theory, biomechanics, physiology, kinesiology, RTP concepts, psychology, pedagogy, motor learning, management skills, communication skills, self-care, career development concepts, just to name a few……..



Donovan Bailey (No. 2)

15. As far as long-term career development goes—is there a series of stages you'd recommend one plan for? Are there any practices you'd warn against?

My biggest recommendation is build networks and mentors, diverse and layered on both. Avoid bubbles and binary thinking. Continuous auditing by key folks you trust.

16. For the older coach with 10+ years of experience—what are some mistakes or areas of neglect you see repeated again and again and think a coach should pay more attention to?

Bias to ideas or beliefs and a cessation of seeking deeper understanding of first principles for the event at hand.

17. I think it is fair to say you have taken an eclectic approach to training and sport. Who are some of the authors or thinkers, related or unrelated to the sport, that have influenced your approach to coaching?

I have always been enchanted by folks who took the other fork in the road. I read volumes of history, biographies, research, etc. looking for common denominators for success and failures. Military, government, institutions, and cultures are main buckets of inquiry.

18. Are there any areas you wish you had looked into or studied earlier in your career?

For sure the tech side of things, I didn't use mobile phones or computers until the late 90s. As technology has evolved, the understanding and role of fluid dynamics and fascial systems would have made my life a lot easier on the RTP side of coaching.

19. How much have you worked with younger athletes (high school and below)? What are some things we do well in the "American System?" And what are some areas you see that we are deficient?

I have always worked with youth my entire career. I was a HS coach and club coach the first six years of my career. I currently help six local athletes on a weekly basis. I think we do a great job from primary school to university level sport but after that, it is a challenging landscape. I think the demise of physical education in schools has created a lot of issues that coaches now have to deal with. I think early specialization is also a major iceberg we have to surf nowadays.

20. How would you define the American System of track and field development?

Volunteer based in the main until university level. No real plan for post graduate athletes in this country.

WE DO A GREAT JOB FROM PRIMARY SCHOOL TO UNIVERSITY LEVEL SPORT BUT AFTER THAT, IT IS A CHALLENGING LANDSCAPE.

21. Athletic longevity is the result of multiple factors. In your experience where is that concept on the radar screen of the world class athlete?

I realize this may be an idiosyncratic concern (or not a concern at all). Sports medicine support and methodology is the major factor in longevity.

22. Do you use any strategies to extend the functional life of the Golgi tendon organs? Are you of the opinion that an aging GTO dampens the effectiveness of the body's stretch reflexes?

Age is a factor in all physiological decay. I think research and methods for all proprioceptor factors are lacking at this stage of science exploration. One must also factor in fascial contributors to any elastic response mechanism. Tendon management is a current buzzword but to be honest, folks are going down rabbit holes in a lot of their strategies.

23. What do you see as the most difficult psychological quality for an elite athlete to adopt and to master? How do you help them master this?

Mental resilience skills and toolbox are my first layer of development. Closely related to this is emotional skills and agility.

24. What role does involvement with social media play for your athletes? Is this something you encourage or leave to the discretion of the athlete? At what point with social media to you feel the need to intervene and have a coach-athlete discussion?

Depends on how it used and the effects upon the athlete from said use.

25. The pitfalls of early specialization are apparent to most coaches. How do you get this point across to a parent who is dead set on having their son/daughter forsake all other activities to become the next superstar in sport X, Y or Z?

I collect data on these issues and present examples to the contrary. It is imperative we educate parents. Most are not aware of the risks.

26. What is your mindset or steps as you approach the planning for the next coaching session?

Review the plan, analyze the results from previous days, review the debriefs obtained during and after the previous sessions and double-check with the athlete on key items.

27. How do you handle one-on-one technique corrections during a training session?

Depends on level of athlete, time

spent together, needs, time of year, etc. I think in general we do too much on the intervention side of things or try to manage too many variables at once.

28. Charlie Francis told me his greatest challenge was getting his athletes to confidently take the "next step" past being satisfied with being a "finalist" to being a "medalist" or even a champion. How do you approach this potential roadblock or concern?

Education and systematic exposures.

29. What are your feelings on the recent shoe innovations and the slew of record breaking performances from this past year?

Lord Coe has opened Pandora's box with his rulings. We now have no way to compare results historically and the injury fallout is epidemic.

30. What are some of the injuries or injury patterns you are seeing with the new shoes? Are they bone, soft tissue or both? Knee problems? Inside (meniscus or ligament) or outside (patella, collateral ligaments)? Any problems with the hamstrings?

I advise a dozen elite middle distance runners and a handful of coaches on RTP programming. We are seeing a rise in foot bone stress injuries both stress and fracture level diagnoses. A large increase in Achilles tendinopathy is also growing amongst all levels of performance. A concerning trend is in knee cartilage surgeries, rare in this sport discipline in the past. Lastly hip labrum issues also on the rise. We are also seeing a trend whereby certain injuries are occurring all over the training calendar when normally we would see them at a particular part of the season. Carbon fiber transmits forces faster, more powerfully and at unique vectors compared to old model shoes. The foam R&D is creating new foot challenges for runners at touchdown, midstance and at toe-off. Put those two buckets together and we have a storm ahead.

RECOVERY METHODS ARE HUGE ON THE MANAGEMENT SIDE OF THINGS AS IS PROGRAMMING.

31. How do you monitor an athlete's day-to-day recovery? What about between events or rounds in a larger competition?

We use a variety of methods depending on the team around the athlete, their expertise and of course budgets to do so. The old how are you doing survey still out-performs a lot of the tech out there. The warmup and lead-in activities also can provide a window to readiness.

32. One of the old challenges of training high-end sprinters was to "manage" the speed of the nervous system. How do you approach this process? Is it more of a clarification of the nervous system through drill work? Do you strive to improve the coordination of eccentric and concentric contractions within the body? What methods do you use to accomplish this?

I don't think there is any one bucket that influences this factor. We analyze and monitor a variety of output measures and look for trend analysis to determine central nervous system (CNS) readiness. I am not a fan of drill work for physiological influence. Recovery methods are huge on the management side of things as is programming. Density control is very critical at key stages of the training year.

33. To what extent do you use assisted training? If so, in what formdownhill running, towing, elastic cords, etc.

One of my weak spots and biases. The ROI on this were not key performance indicators (KPI) factors for me. I had more pressing issues in development.

34. What about resisted running? And if so, again, what methods?

I have used hills and graduated resistance. Unfortunately, during most of my career, access to these tools were limited so not much experimentation with it. The coaches at Altis are doing landmark work on this area but the jury is still out on the ROI.

35. For both assisted and resisted running—what times of the year or within a yearly training cycle are these methods employed—how do you quantify the efforts? By visual presentation, times or repetitions?

With my limited use, it was early in the training year and output

measures combined with kinematic measures governed the use and designs.

36. How much video analysis do you use? There are numerous apps available for cell phones that can produce instantaneous, in-depth analysis. Is that feedback used immediately or do you set aside time to make a deeper analysis?

I was mentored by Coach Tellez, a pioneer in applied biomechanics and film use. It has been a pillar for my work my entire career. Methodology of use is dependent on the environments I work in. I think there is a bad trend to overuse currently within training sessions and a huge bias on what folks are looking at.

37. Long ago Obadele Thompson ran a wind-aided 9.69 when the 100m world record was in the 9.8s. I heard that he was "exhausted" in the days following that effort. To me it was a classic example of the 10-Day Rule. Bompa talked about the nervous system requiring as long as 7x as much time to recover as the muscular system. What has always puzzled me is what gets "exhausted" within the nervous system. Is it something with the axoplasm? A depletion of the neurotransmitters? Or something else?

I think there are a variety of insults to the biologics in a very fast run. CNS/neurotransmitters are one area for sure but also tissue/structural damage must be explored. The stressors on the immune/ hormonal systems are just now being deeply reviewed.

38. Thompson's 100/200m performances at the Sydney Olympics are seen as one of the great drug-free doubles in modern times. What preparation and recovery methods were employed to prepare him for the "next" round of competition?

Sleep was the biggest variable. Jet lag issues, media demands and the Olympic village were huge challenges on this front. His diet was below average and not a tool we could lean on. He had a great medical team around him at that meeting also. I think the medical team did a fantastic job on the recovery side of things. Sadly, we fell short in the 200 and I think that was due mainly to the lack of high level racing in that event that season. Nothing can replace competition stressors on biological tolerance abilities.

39. There always seems to be a wrinkle that pops up in coaching that is promoted to "revolutionize" the sport, but at the end of the day it still comes down to the athlete's ability to produce on the track or the road, the runway or the circle. How have you balanced the really true innovations versus the new distraction of the month?

In 50 years of coaching, I have seen hundreds of magic bullets proposed. In my experience, first principles win. Ninety percent of innovation is finding ways to do the basics better.

40. Is there any resources you'd recommend? Books, apps or websites that you look to for ideas and information you trust?

I encourage folks to build a history library on key areas of use in their craft, study the masters. I have a lot of mentors and experts on speed dial so I use them as filters on who, what and when to explore things.

RUNNING PERIODIZATION PART 5: MENSTRUAL CYCLE PERIODIZATION

BY JASON R. KARP, PHD, MBA

Adapted from the book *Running Periodization: Training Theories to Run Faster, by Dr. Karp.*
This is the third article in this series.

"Understanding the menstrual cycle is the key to unlocking the female runner's training secret."

Atalanta, the Greek goddess of travel and adventure, was known for her athletic prowess that rivaled that of most men. Warned against marriage by an oracle, Atalanta came up with a plan to marry only a suitor who could beat her in a race, killing those who failed to outrun her. "I am not to be won till I be conquered first in speed. Wife and couch shall be given as prize unto the swift, but death shall be the reward of those who lag behind," she exclaimed in the Roman poet Ovid's *Metamorphoses*.

Many would-be suitors were beaten until Hippomenes fell in love with Atalanta and wanted to marry her. When hearing of the challenge, he was skeptical, but when Atalanta took off her outer garments for her next race, that was all he needed to send in his race entry. There was one problem, however. He knew he could not beat Atalanta, so he asked for help from—who else?—Aphrodite, the goddess of love. Aphrodite provided Hippomenes with three golden apples to drop on the race course to distract Atalanta. During the race, whenever Atalanta pulled ahead of Hippomenes, he rolled one of the golden apples off the course, tempting a curious Atalanta to stop and pick up the apple. Atalanta's frequent stops to fetch the apples were just enough for Hippomenes to win the race and Atalanta's hand in marriage.

While men have been running for as long as physical labor has been deemed masculine and heroic, running was not considered an appropriate female activity for most of the 20th century. We now know better. In fact, when it comes to distance running, women can be quite good.

Ever notice that women and girls tend to be able to run for long

periods of time, even be able to hold a solid pace for a while, but they often lag behind when running fast for short bursts? There are exceptions, of course, as there always are in sport, and in the rest of life, but, on average, females tend to be better at long endurance than at either sprinting or short endurance (800 meters and 1,500 meters/mile).

From the time we are boys and girls, it is evident there are many differences between males and females. Many of these differences—anatomical, muscular, physiological, hormonal, and metabolic—influence girls' and women's running abilities, race performances, and responses to training.

Women and men are even more different than we think: More than 3,000 genes are expressed differently between the muscles of females and males. Scientific research has revealed that there seem to be two main reasons why females are so good at endurance: (1) estrogen, which shifts muscle metabolism toward a greater reliance on fat as fuel and hastens muscle repair and recovery, and (2) proportion of slow-twitch muscle fibers, which are better suited for aerobic endurance than the more powerful, anaerobic fast-twitch fibers.

Muscle biopsy research on the vastus lateralis (the largest of the quadriceps muscles) has shown that women have 35 percent more slow-twitch fibers, 30 percent less fast-twitch A fibers, and 15 percent less fast-twitch B fibers compared to the vastus lateralis of men. Another study showed that the average fiber type percentages in the female vastus lateralis muscle are 41 percent slow-twitch, 36 percent fast-twitch A, and 23 percent fast-twitch B, whereas men have 34 percent slow-twitch, 46 percent fast-twitch A, and 20 percent fast-twitch B. The area the fibers take up in the muscle is also different between females and males: Slow-twitch fibers account for 44 percent of the area in women and 36 percent in men, and fast-twitch A fibers account for 34 percent of the area in women and 41 percent in men. The more slow-twitch muscle fibers in women make female muscles less fatigable than male muscles.

Given the metabolic and muscle fiber differences between females and males, it does appear that women, in general, have a greater capacity for aerobic endurance and long-distance running. My experience as a coach of female runners for many years tells me the same thing. Once in a while, you come across a female distance runner who is better at the middle distances (800 and 1,500 meters/mile) than at the longer distances, but, when looking at a cross-section of the population, it is much more common for females to be better at the longer distances. Of note is the narrowing in performance differences between females and males as the race distance gets longer, especially beyond a marathon. At the elite level, there is a 13.1 percent difference in the men's and women's world records for one mile and a 12.1 percent difference for 5K, but only a 10.2 percent difference for the marathon and a 6.5 percent difference for 100K ultramarathon. In 2002 and 2003, ultramarathon runner Pam Reed showed how good women can be at long races by winning the 135-mile (217K) Badwater Ultramarathon, beating all the men. Research is revealing that female ultramarathon runners seem to have a greater resistance to fatigue than do equally trained men whose performances are superior up to the marathon distance.

THE MORE SLOW-TWITCH MUSCLE FIBERS IN WOMEN MAKE FEMALE MUSCLES LESS FATIGABLE THAN MALE MUSCLES.

Among all the differences between females and males, perhaps the greatest female-specific implication for training is the menstrual cycle, which is the defining physiological characteristic of females. The menstrual cycle occurs monthly from a woman's first period (called *menarche*; age 11 to 14) until menopause (age 45 to 50). It used to be taboo to talk about the menstrual cycle. It sometimes still is. It's not often talked about at the dinner table, and hardly ever by a coach. In the 1800s, doctors in Europe and North America thought physical activity would make a woman's uterus fall out. As a result, women were not allowed to run races. After women's distance running was introduced at the Olympics in 1928, the visible exhaustion of some of the women at the end of the 800 meters was taken as affirmation that distance running was too dangerous for women, and it was dropped from the Olympics until 1960. We've come a long way since then. Women compete in many athletic events. And women run marathons without their uteruses falling out.

It's hard to suddenly talk openly as an adult about a subject that we've learned for years to be so silent about. But understanding the menstrual cycle is the key to unlocking the female runner's training secret.

FEMALE PHYSIOLOGY

The two major sex hormones of the menstrual cycle—estrogen and progesterone—change continuously throughout the cycle, as a complex interaction of positive and negative feedback mechanisms regulate the timing and amount of hormone secretion. With the large fluctuations in the levels of these hormones, the phases of the menstrual cycle significantly affect the female runner's hormonal environment, and, therefore, her physiology. Variables such as oxygen consumption, body temperature, lung function, hydration, muscle glycogen storage, fat and carbohydrate metabolism, and exercise performance are all affected by the menstrual cycle.

A textbook menstrual cycle is 28 days (but can last up to 35 days) and is divided in half by ovulation on day 14, as the ovum (egg) is released from the ovary. Although the menstrual cycle is complicated, an easy way to think of it is that the first half—the follicular phase—begins with the period and is dominated by estrogen; the second half—the luteal phase—begins with ovulation and is dominated by progesterone, although estrogen is also elevated in the middle of the luteal phase. The luteal phase ends with the start of the period, and the cycle starts over again.

The follicular phase typically lasts 14 days but can last 11 to 21 days. (If you're doing the math, that means that when the cycle is shorter or longer than 28 days, the difference is because of a shorter or longer follicular phase.) Following the period, which typically lasts 3 to 5 days, estrogen rises, peaking around day 14, right before ovulation, when it is 10 times the level it was at the beginning of the follicular phase. During the follicular phase, progesterone remains low.

GIRLS WHO START INTENSE TRAINING BEFORE THEIR FIRST PERIOD DELAY THEIR MENSTRUATION NEARLY A YEAR LATER THAN GIRLS WHO ALREADY HAVE MENSTRUAL PERIODS WHEN THEY START TRAINING. ONCE MENSTRUAL ACTIVITY STARTS TRAINING.

The luteal phase always lasts 14 days. Progesterone rises after ovulation, while estrogen drops before rising again toward the middle of the phase. The increase in progesterone, which, at its peak in the middle of the luteal phase, is 25 times the level it was during the follicular phase, causes body temperature to increase to prepare for the fertilization of an egg. If fertilization does not occur, both estrogen and progesterone levels decrease abruptly in the second half of the luteal phase.

The exact duration of the menstrual cycle can vary from woman to woman, a cycle to cycle, and year to year. Changes in hormone levels can also affect the duration of the cycle, as it does in teenagers and women in their forties nearing menopause, who tend to have low or changing progesterone levels. Birth control pills, a low percentage of body fat, weight loss, being overweight, stress, and intense exercise can also change the cycle duration.

MENSTRUAL IRREGULARITIES

In a perfect physiological environment, your athletes' menstrual cycles will occur every month and always be the same duration. But that doesn't always happen, especially among many girls and women who train with high volumes and high intensities and have a low percentage of body fat. They often experience irregular or even absent menstrual cycles, which reduce estrogen levels.

Girls who start intense training before their first period delay their menstruation nearly a year later than girls who already have menstrual periods when they start training. Once menstrual activity starts, its continued occurrence is also sensitive to training. In response to heavy training, the first change in the menstrual cycle is a shortening of the luteal phase, followed by cycles without ovulation, and, finally, cessation of menses, called *amenorrhea*, which is defined as having three or fewer periods per year, and results in constantly low levels of estrogen and progesterone. A female runner with amenorrhea has about one-third the estrogen concentration and about 10 to 20 percent the progesterone concentration of a

normally menstruating woman. Thus, endocrinologically, an amenorrheic runner experiences an estrogen-deficient state similar to that of a postmenopausal woman.

The incidence of menstrual irregularity or amenorrhea varies from woman to woman. Some female runners can train at high volumes and never disrupt or lose their menstrual cycle, while other women notice changes in their cycles with relatively little training. Long-distance runners, in particular, are at an increased risk for menstrual irregularity or amenorrhea, in large part due to the enormous number of calories that are burned from running high volume. However, consuming fewer calories than what is burned, rather than the stress of exercise itself, is responsible for the loss of the menstrual cycle. Consuming enough calories to replace the calories burned from running can prevent amenorrhea. Therefore, if your athletes run a lot, they need to increase the number of calories they consume throughout the day to keep up with the large number of calories they burn by running.

One of the biggest consequences of menstrual irregularity or amenorrhea is poor bone health. Estrogen is extremely important in facilitating the absorption of calcium into bones. Any disruption to the menstrual cycle can cause a decrease in bone density, increasing the risk for osteoporosis and stress fractures, which can occur with only minimal impact to the bones. Female runners with irregular or absent menstruation have significantly lower bone density than runners with regular menstruation and even compared to nonathletes, particularly at the lumbar spine.

ONE OF THE BIGGEST CONSEQUENCES OF MENSTRUAL IRREGULARITY OR AMENORRHEA IS POOR BONE HEALTH.

How should your athletes train when they don't have a period, or if their menstrual cycle is irregular? An irregular menstrual cycle makes planning the training more complicated than when not having a menstrual cycle at all, because you can't predict the months they will have a normal cycle and the months they won't, unless their cycle is regularly irregular and therefore predictable. If their cycle is irregularly irregular, you need to plan the training month-to-month or even week-to-week. With no menstrual cycle, they can train without consideration to the hormonal environment, since estrogen and progesterone won't fluctuate throughout the month. It's perfectly okay to run a lot without a menstrual cycle (plenty of girls and women do). However, in the face of a lack of bone-protecting estrogen, you need to take extra precaution in regard to their bone health, especially if they run a lot. It's a good idea to regularly get their bone density evaluated as part of an annual medical check-up to determine whether or not they're at risk for a running-related stress fracture. Strategies like meticulously-planned training that avoids rapid increases in volume and intensity, calcium and vitamin D supplements, oral contraception to provide estrogen, and intense strength training to increase bone density can all help mitigate the risk for bone injuries.

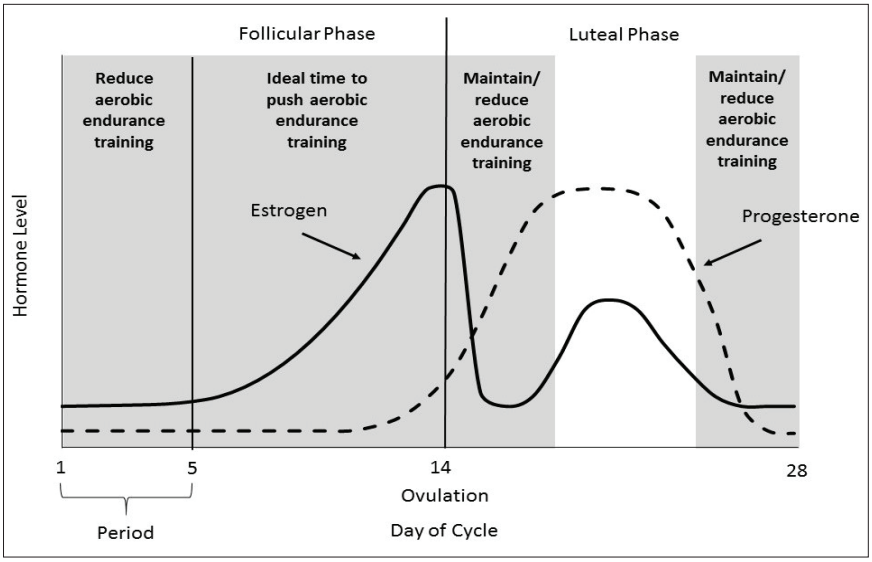
TRAINING

The female runner's training program must always be open to change, moving workouts around based on the menstrual cycle's hormonal fluctuations and on how she feels. However, few female runners or coaches of female runners take the menstrual cycle into consideration when planning training, in regard to both optimizing the training and injury prevention.

They spend too much time working *in* their training rather than working *on* their training.

Working *on* the training means developing a system of training **that** is specific to female runners. It means developing a system that works. The menstrual cycle is that system. But guess what? You don't need to create the system yourself. The menstrual cycle already exists. The system is already made for you! You only need to listen to it and follow it.

Before trying to get fancy or sophisticated with menstrual cycle-based training, the simplest (and insightful) way to implement the system is to keep track of how your athletes feel and perform during their normal training. Have them write down each day of their menstrual cycle, the data from their workouts, and how they felt during each run. After a few months of documentation, you'll likely notice a pattern. Many female runners I have coached haven't felt as good during workouts and experience subpar training days in the few days leading up to and including their periods. While harder workouts may be more challenging during their period, easy running



may actually improve their mood and alleviate physical symptoms associated with their period. (Since estrogen begins to rise, albeit slowly, when their period starts, it's possible your athletes may actually feel better when running during their period compared to the few days prior.)

Once you have the pattern, organize your athletes' training around the menstrual cycle so that they run more and harder when they feel good, and less and easier when they don't feel good. That may sound simple, but most runners and coaches like to stick to a training plan, rather than be flexible, with their plan being fluid. To squeeze the most out of your athletes' training, your plan should be fluid, working with, rather than against, their physiology.

Through the effects of estrogen and progesterone, the menstrual cycle exerts its greatest training-related influence on *aerobic endurance* training. When *anaerobic* workouts are included in the training, the menstrual cycle isn't so much of a

Phase 1: General Preparation (12 weeks)				
	Follicular Phase	**Luteal Phase**	**Luteal Phase**	**Follicular Phase**
	Week 2	**Week 3**	**Week 4**	**Week 1(recovery)**
Mesocycle 1: Aerobic Capacity (4 weeks)	85% peak volume 3 Easy Runs 3 Long Runs	85% peak volume 5 Easy Runs 1 Long Run	75% peak volume 5 Easy Runs 1 Long Run	55% peak volume 5 Easy Runs 1 Long Run
Mesocycle 2: Aerobic Capacity (4 weeks)	90% peak volume 3 Easy Runs 3 Long Runs	90% peak volume 5 Easy Runs 1 Long Run	85% peak volume 5 Easy Runs 1 Long Run	60% peak volume 5 Easy Runs 1 Long Run
Mesocycle 3: Quality Endurance (4 weeks)	100% peak volume 3 Easy Runs 3 Fartleks	100% peak volume 5 Easy Runs 1 Fartlek	90% peak volume 5 Easy Runs 1 Fartlek	65% peak volume 5 Easy Runs 1 Fartlek
Phase 2: Specific Preparation (13 weeks)				
	Follicular Phase	**Luteal Phase**	**Luteal Phase**	**Follicular Phase**
	Week 2	**Week 3**	**Week 4**	**Week 1(recovery)**
Mesocycle 4: Acidosis Threshold (AT) (4 weeks)	90% peak mileage 3 Easy Runs 3 AT Workouts	90% peak mileage 5 Easy Runs 1 AT Workout	75% peak volume 5 Easy Runs 1 AT Workout	60% peak mileage 5 Easy Runs 1 AT Workout
Mesocycle 5: Aerobic Power (VO_2max) (4 weeks)	80% peak mileage 3 Easy Runs 3 VO_2max Workouts	80% peak mileage 5 Easy Runs 1 VO_2max Workout	65% peak mileage 5 Easy Runs 1 VO_2max Workout	50% peak mileage 5 Easy Runs 1 VO_2max Workout
Mesocycle 6: Anaerobic Capacity (AC) (4 weeks)	70% peak mileage 3 Easy Runs 3 AC Workouts 2 x week: strides	70% peak mileage 5 Easy Runs 1 AC Workout 2 x week: strides	70% peak mileage 5 Easy Runs 1 AC Workout 2 x week: strides	55% peak mileage 5 Easy Runs 1 AC Workout 2 x week: strides
Microcycle 13: Taper (1 week)	45% peak mileage 4 Easy Runs 1 AC Workout 2 x week: strides **5K/10K Race**			

consideration outside of whatever aerobic training is still being done. That's because the menstrual cycle does not seem to affect anaerobic capacity and power (speed). Therefore, no specific times of the month are better suited for speed and power training. When it comes to strength training, however, there is some evidence that training during the follicular phase is better for increasing muscle size and strength.

Plan increases in training volume to coincide with the follicular phase (especially week 2), when estrogen is high. Refrain from increasing (or slightly reduce) weekly mileage during their period and at times of the month when estrogen is low—early and late luteal phase (early in week 3 and late in week 4). Avoid challenging workouts around your athletes' periods, especially if they don't feel well or if they have major cramps or feel bloated (bloating occurs from the rapid drop in progesterone as the athlete transitions from the luteal phase to the follicular phase).

SAMPLE TRAINING PROGRAM

This sample training program exploits the power of the menstrual cycle to plan the training, using a block and linear periodization format. The program, which assumes a four-week (28-day) menstrual cycle, begins with week 2 of the menstrual cycle, with week 1, which includes the period, as the recovery microcycle that completes each mesocycle. Thus, the mesocycles are planned in the order of weeks 2, 3, 4, and 1 of the menstrual cycle. Adjust the microcycle and mesocycle duration if your athletes' cycles are longer or shorter than four weeks (remember, you don't have to make each microcycle seven days).

The training load increases in a concentrated block during estrogen-dominant week 2. An extra week is added to the end of the program so the target race occurs at the end of week 2 of the menstrual cycle, when estrogen is at its peak.

Given the variability in the menstrual cycle between runners and in how female runners feel during it, I suggest you have your athletes first find their own unique pattern by keeping menstrual cycle and training logs. With a regularly-occurring menstrual cycle, they should discover a predictable pattern over a few months that you can then use to organize their specific training.

Dr. Jason Karp is a coach, exercise physiologist, bestselling author of 15 books and more than 400 articles, and TED speaker. He is the 2011 IDEA Personal Trainer of the Year and two-time recipient of the President's Council on Sports, Fitness & Nutrition Community Leadership award. His REVO$_2$LUTION RUNNING coaching certification, which has been obtained by coaches and fitness professionals in 26 countries, was acquired by International Sports Sciences Association. In 2021, he became the first American distance running coach to live and coach in Kenya. *Running Periodization* and his other books are available on Amazon.

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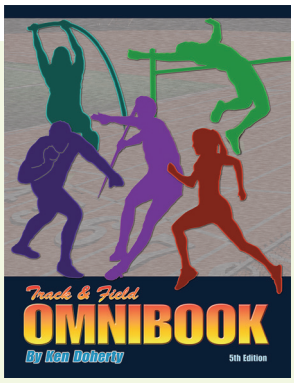

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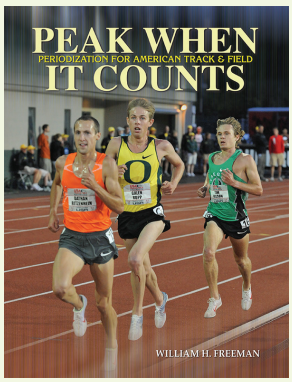

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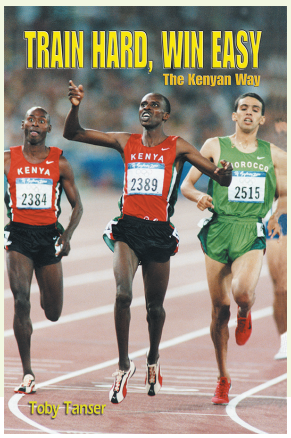

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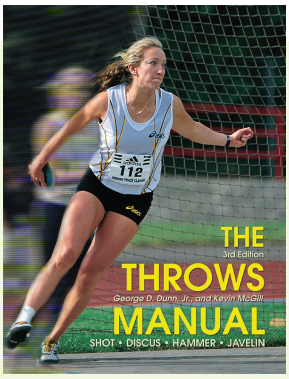

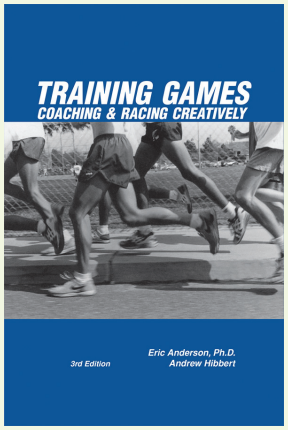

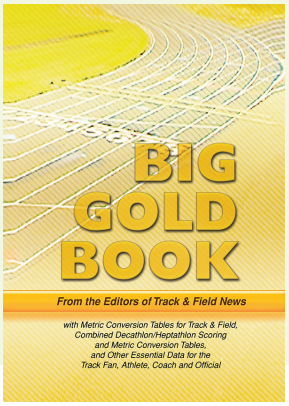

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YOUTH TESTING AND THE JUMPS DECATHLON

BY RUSS EBBETS

Track Coach editor Russ Ebbets describes two testing programs.

Periodic testing should be an integral part of any track & field program. "Testing" as used here, is not the pencil and paper type, with multiple choice questions, but rather physical tests that give an insight into fitness levels or highlight areas of weakness. Traditionally, the test used can be executed in short order and often with minimal space or expense.

The requirements of a good test are that they evaluate a specific physical skill such as jumping ability or acceleration. Test results should be easily comparable from one athlete to the next and also from one training cycle to the next. Certain protocols should be followed so that the reproducibility from one test date can be compared to a subsequent test date to give one valuable cumulative data.

Test protocols can be gleaned from online sources (www.speedendurance.com, www.brianmac.co.uk) or from recommendations from such organizations as the National Strength and Conditioning Association (https://www.nsca.com). Again, the value of any test results is directly proportional to the consistent application of test protocols.

The types of tests are limited almost only by one's imagination. Consider which biomotor skills are to be tested. Tests can be used to evaluate general fitness that challenge multi-link motions. Multi-link motions combine elements of speed, strength and coordination. More specific tests could be implemented for speed and power athletes that document results for key indicators that contribute to the competitive action.

Endurance tests may require more time (minutes versus seconds) but can be used to determine VO_2 Max and oxygenation capabilities with something as simple as a three-minute Queens College Step Test and a stopwatch (Calculate - VO_2Max: 3 Minutes Step (Forestry) | TrainerMetrics).

The placement of testing is important within one's annual plan (Figure 1). Early season tests can document the efficacy of one's offseason training and benchmark one's current level of fitness. Testing can also note areas of strengths and weaknesses that can be addressed as one moves through a preseason prepatory phase of training. This form of testing can be especially useful within a four-year cycle to document the evolution of one's talent (Figure 2).

Documented on the next two pages are two possible applications of testing. The first is a description of the youth-oriented program that was recommended to the Junior Olympic programs of the Niagara Association of Western New York (Figure 3 – Test Directions, Figure 4 – 5-Star Scoring Guide, Figure 5 – 5-Star Cognitive Development Program). This program was a version of Gwenda and Tony Ward's British Five-Star Program profiled in Track Coach #237.

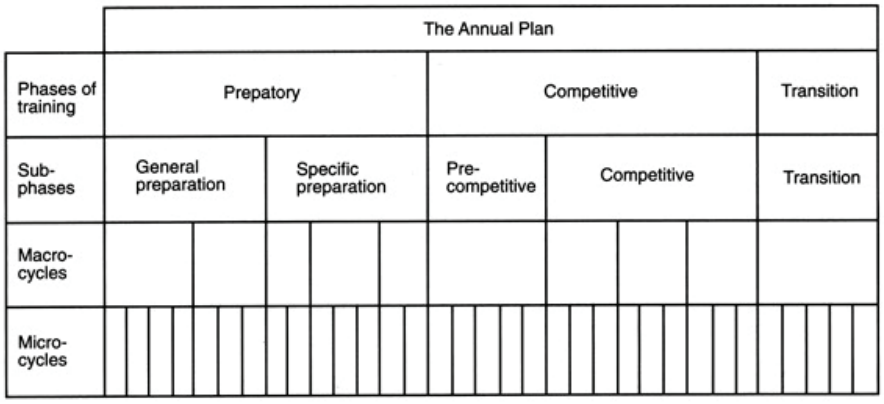


Figure 1: Placement of testing can be an important goal in the Prepatory stage of one's annual plan. (Bompa, 1983)

CLUB: _____

ATHLETE: _____

EVENT: 800 M

	OBJECTIVES			
	19 . .	19 . .	19 . .	19 . .
PERFORMANCE	2:14	2:06	2:01	1:58–1:59
PHYSICAL PREP.	—Develop general physical preparation —Develop aerobic endurance	—Improve gen. phys. prep. —Dev. muscular endur. —Improve aerobic endur. —Develop anaerobic endurance	—Improve specific phys. prep. —Improv. musc. endurance —Perfect aerob. end. —Improve anaerob. end.	—Perfect spec. phys. prep. —Perfect aerob. endur. —Perfect anaerob. endur.
TECHNICAL PREPARA.	—Correct arm carriage —Correct position of head	—Efficient stride length —Minimum vertical bouncing	—relaxed running —efficient technical movement	→
TACTICAL PREP.	—Steady pace throughout the race	—Fast, alert in the first 400 m. —Steady pace in the body of the race	—Take a good position before the finish —Perfect the start	—Cope with various strategies —Perfect the finish
PHYCHO-LOGICAL PREP.	—develop mental awareness and the resulting conseq. —attempt to modify the above	→ —develop self concept.	—Identify anxieties and stressors and how to handle them —relaxation techniques	→
TESTS AND STANDARDS	100 M = 12.4 400 M = 57.00 1500 M = 4.22 VO_2 Max = 3.08 ℓ	12.0 55.5 4:16 3.7 ℓ	11.7 53.0 4:09 4.1 ℓ	11.5 51.5 4:04 4.5 ℓ
TRAINING FACTORS	Volume Intensity Peaking Physical Prep. Technical Prep. Tactical Prep. Psychological Prep.	% 100 90 80 70 60 50 40 30 20 10		

Figure 2: Bompa's 4-year cycle to document development of Four Global Concepts. Tests are used to benchmark progress. (Bompa, 1983)

Figure 3: Test Directions

100m – From a standing or crouched start, "go" command may be clap, whistle, etc. Hand times are recorded. Athletes are allowed two attempts.

55Hurdles – There will be four 9" stubby/speed hurdles set at either 6m, 7m or 8m apart to promote a 3-step hurdle pattern. The distance to the first hurdle for ALL athletes will be 13 meters. Athlete can run whichever hurdle set (i.e. – 6m, 7m, 8m) they choose. Start and timing as above. Athletes are given two attempts.

High Jump – The cross bar begins at the lowest height (0.75m) and proceeds up from there. Athletes will jump with a scissors kick style. Athletes will be given two attempts at each height and may attempt all the heights. Two successive failures ends the event. Athletes may enter the testing at whatever height they choose.

Standing Long Jump – From a standing double support the athlete leaps forward. Where the heels land marks the distance of the attempt. Athlete must "fall forward". Athletes are given two attempts.

Standing Hop, Step and Jump – From a single or double support (directions are given for right-right-left-pit jump). The athlete hops forward (same leg to same leg, or right to right leg), then steps forward to the opposite leg (i.e. right leg to left leg) and then leaps forward from the left leg to landing in the pit with distance recorded as with the Standing Long Jump. Athletes are given two attempts.

Vortex Throw – Athletes are allowed a 7-step approach. Throws must be done before the foul line. Distance is measured where the Vortex lands. Athletes are given two attempts.

Soccer Ball Chest Push Pass – From a kneeling two-line stance a soccer ball is pushed for distance using a two-armed chest pass. Distance is recorded where the soccer ball lands. Athletes are given two attempts.

Scoring Pyramid for Best 5 Events

		24	25			**5-Star**
23		22	21	20		**4-Star**
19	18	17	16	15	14	**3-Star**

Figure 4: 5 STAR SCORING GUIDE

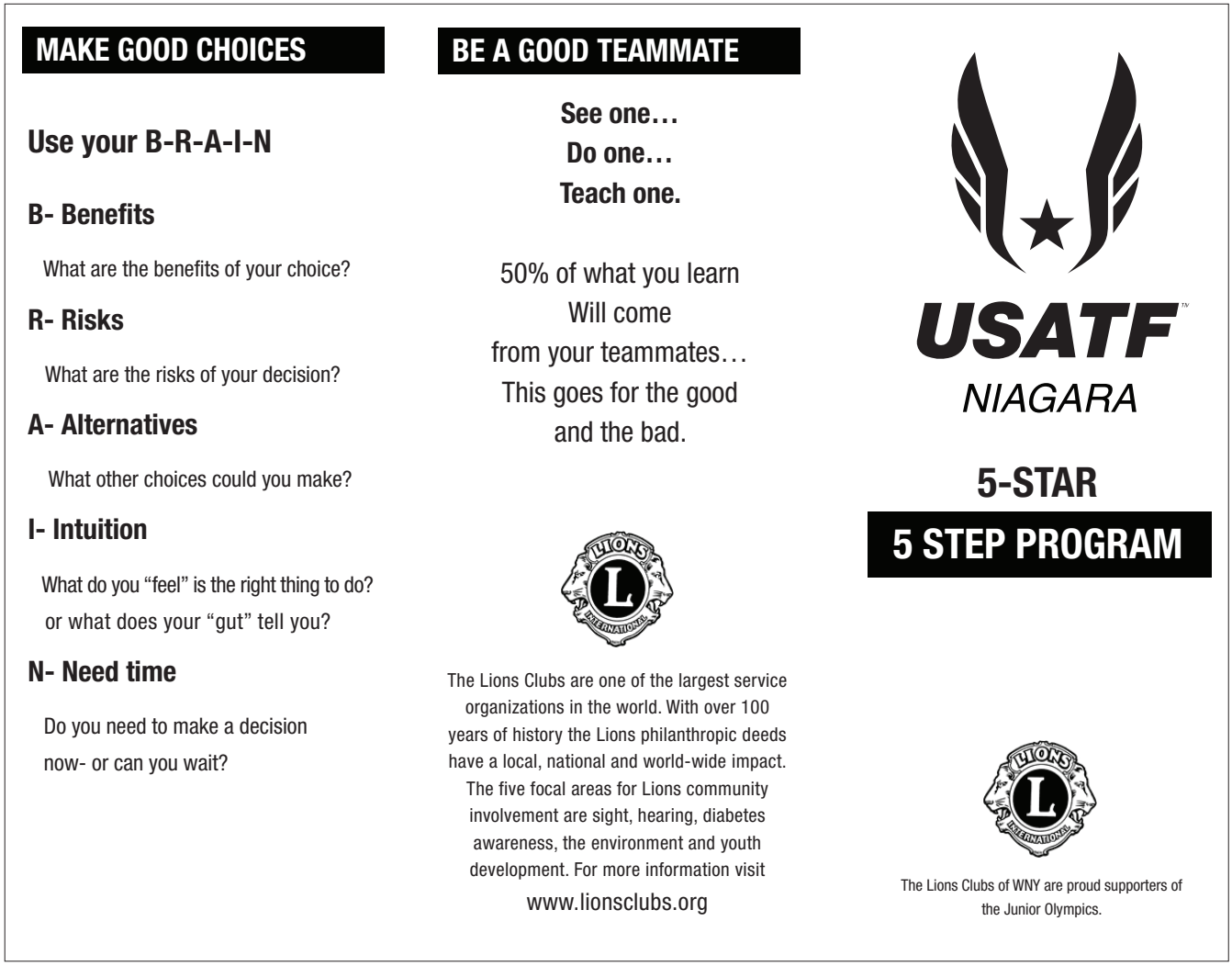
Points	100m Sprint	55m Hurdles	High Jump	Standing Long Jump	Standing Hop, Step, Jump	Vortex Throw	Soccer Ball Chest Push Pass
5	14.8ht	10.1ht	1.2m	2.0m	6.30m	35.0m	7.0m
4	15.8	11.3	1.1	1.75	5.70	31.0	6.0
3	17.0	12.3	1.0	1.50	5.10	24.5	5.0
2	18.0	13.4	0.9	1.25	4.40	18.5	4.0
1	19.0	15.0	0.75	1.00	3.10	7.0	3.0

Notes –
Sprint/Hurdles are hand times with traditional "clap" start. Other distances are measured in meters. Each discipline allows two attempts except High Jump.
Results should be recorded on the score sheet below.
Faster and further marks than the 5-point efforts do not garner extra points.
Distance cones or marks in a sand pit are allowed.
Events to be done in one day. Events can be done in any order.

Score Sheet

Date	Mark 1	Mark 2	Points	Personal best	Best points
100m					
55 Hurdles					
High Jump					
Standing LJ					
Standing Hop,Step,Jump					
Vortex Throw					
Chest Push Pass					
Total	**Best 5 Events**			XXX	

Figure 5: 5-Star Cognitive Development Program



The 5-Star Program was a series of short tests with points generated for marks achieved. The marks for an athlete's five best performances were added together to earn a five, four or three star patch award. The program could be administered yearly up to age 12. The cognitive component (Figure 5) included five areas: cooperation, decision making, focus, punctuality and diet. This program offers flexibility and could be personalized to an individual club's developmental philosophy. The cognitive component was designed to complement the six-week training sessions of USATF's Run, Jump, Throw program.

The second half of this article covers the jumps decathlon (Figure 6). This is a series of up to 10 "events." The series of tests cycle through jumps (standing long jump, standing triple jump, spring jumps, etc.) that would be valuable indicators for speed and power events. The original AAA 5 Star Awards Scoring tables are shown with a broader range of events detailed in TC #237.

It bears repeating that one of the strengths of either of these two programs is the flexibility they offer. Both programs can be tailored to the needs of one's particular program. A second strength of using these testing systems is the broader application to multiple sports. Finally, the skills tested and documented can clearly identify the efficacy and usefulness of one's preparatory work at a given point in time and over the course of a career.

CONCLUSION

There are numerous advantages to implementing some form of testing into one's program. Whether we are talking about an entry level youth program or a high level

Points	Standing Long Jump	Stand Triple Jump	2 Hops Step & Jump	2 Hops 2 Step & Jump	2 Hops 2 Steps & 2 Jumps	5 Spring Jumps	Stand 4 Hops & Jump	Run 4 Hops & Jump	25m Hop in secs	5 Stride Long Jump
100	3.73m	10.51m	13.00m	15.54m	19.15m	17.06m	17.67m	23.77m	2.07	7.28
99	—	10.43m	12.90m	15.46m	18.99m	16.91m	17.52m	23.62m	—	—
98	3.65m	10.36m	12.80m	15.39m	18.84m	16.76m	17.37m	23.46m	2.08	—
97	—	10.28m	12.69m	15.31m	18.69m	16.61m	17.22m	23.31m	—	7.26m
96	3.58m	10.21m	12.59m	15.08m	18.54m	16.45m	17.06m	23.16m	3.00	—
95	—	10.13m	12.49m	15.01m	18.38m	16.40m	16.96m	23.01m	—	—
94	3.50m	10.05m	12.39m	14.88m	18.23m	16.25m	16.86m	22.85m	3.01	7.23m
93	—	9.98m	12.29m	14.78m	18.08m	16.15m	16.76m	22.70m	—	—
92	3.42m	9.90m	12.19m	14.68m	17.93m	16.00m	16.61m	22.55m	3.02	—
91	—	9.82m	12.09m	14.57m	17.77m	15.84m	16.45m	22.35m	—	7.21m
90	3.35m	9.75m	11.98m	14.47m	17.62m	15.79m	16.35m	21.99m	3.03	—
89	—	9.68m	11.88m	14.37m	17.47m	15.64m	16.25m	21.79m	—	—
88	3.27m	9.60m	11.78m	14.27m	17.32m	15.54m	16.15m	21.64m	3.04	7.18m
87	—	9.52m	11.68m	14.17m	17.17m	15.39m	16.00m	21.48m	—	—
86	3.20m	9.44m	11.58m	14.07m	17.01m	15.23m	15.84m	21.33m	3.05	—
85	—	9.37m	11.48m	13.96m	16.91m	15.18m	15.74m	21.18m	—	7.16m
84	3.12m	9.29m	11.37m	13.86m	16.76m	15.03m	15.64m	21.03m	3.06	—
83	—	9.22m	11.27m	13.76m	16.66m	14.93m	15.54m	20.80m	3.07	7.13m
82	3.04m	9.14m	11.17m	13.66m	16.50m	14.83m	15.44m	20.65m	3.08	—
81	—	9.06m	11.07m	13.56m	16.35m	14.68m	15.34m	20.42m	3.09	7.11m
80	2.97m	8.99m	10.97m	13.46m	16.20m	14.57m	15.23m	20.26m	4.00	—
79	—	8.91m	10.87m	13.36m	16.10m	14.42m	15.08m	20.11m	4.02	7.08m
78	2.89m	8.83m	10.76m	13.25m	16.00m	14.32m	14.93m	19.96m	4.03	—
77	—	8.76m	10.66m	13.15m	15.84m	14.22m	14.83m	19.81m	4.04	7.06m
76	2.81m	8.68m	10.56m	13.05m	15.69m	14.07m	14.73m	19.58m	4.05	7.03m
75	—	8.61m	10.46m	12.95m	15.54m	13.96m	14.63m	19.43m	4.06	7.01m
74	2.74m	8.53m	10.36m	12.85m	15.39m	13.86m	14.47m	19.20m	4.07	6.95m
73	2.69m	8.45m	10.26m	12.75m	15.23m	13.71m	14.32m	19.04m	4.08	6.90m
72	2.66m	8.38m	10.15m	12.64m	15.13m	13.61m	14.22m	18.89m	4.09	6.85m
71	2.64m	8.30m	10.05m	12.49m	15.03m	13.51m	14.12m	18.74m	5.00	6.80m
70	2.61m	8.22m	9.95m	12.42m	14.88m	13.41m	14.02m	18.59m	5.01	6.75m
69	2.59m	8.15m	9.85m	12.34m	14.73m	13.25m	13.86m	18.44m	5.02	6.70m
68	2.56m	8.07m	9.75m	12.19m	14.63m	13.10m	13.71m	18.28m	5.04	6.62m
67	2.53m	8.00m	9.65m	12.09m	14.47m	13.00m	13.61m	18.13m	5.05	6.55m
66	2.51m	7.92m	9.55m	11.98m	14.32m	12.90m	13.51m	17.98m	5.06	6.47m
65	2.48m	7.84m	9.44m	11.88m	14.22m	12.80m	13.41m	17.75m	5.07	6.40m
64	2.46m	7.77m	9.34m	11.78m	14.07m	12.69m	13.30m	17.60m	5.08	6.32m
63	2.43m	7.69m	9.24m	11.68m	13.96m	12.59m	13.20m	17.37m	5.09	6.24m
62	2.41m	7.61m	9.14m	11.58m	13.81m	12.49m	13.10m	17.22m	6.00	6.17m
61	2.38m	7.54m	9.04m	11.48m	13.71m	12.34m	12.95m	17.06m	6.01	6.09m
60	2.36m	7.46m	8.94m	11.37m	13.56m	12.19m	12.80m	16.91m	6.02	6.01m
59	2.33m	7.39m	8.83m	11.27m	13.41m	12.03m	12.64m	16.76m	6.03	5.94m
58	2.31m	7.31m	8.73m	11.17m	13.25m	11.88m	12.49m	16.53m	6.05	5.86m
57	2.28m	7.23m	8.63m	11.07m	13.10m	11.78m	12.39m	16.38m	6.06	5.79m
56	2.26m	7.16m	8.53m	10.97m	12.95m	11.68m	12.29m	16.15m	6.07	5.71m
55	2.23m	7.08m	8.45m	10.87m	12.60m	11.58m	12.19m	16.00m	6.08	5.63m
54	2.20m	7.01m	8.38m	10.76m	12.64m	11.48m	12.09m	15.84m	6.09	5.56m
53	2.18m	'6.93m	8.30m	10.66m	12.49m	11.37m	11.98m	15.69m	7.00	5.48m
52	2.15m	6.85m	8.22m	10.56m	12.34m	11.27m	11.58m	15.54m	7.01	5.41m
51	2.13m	6.78m	8.15m	10.46m	12.19m	11.17m	11.42m	15.39m	7.02	5.33m
50	2.10m	6.70m	8.07m	10.36m	12.03m	11.07m	11.27m	15.23m	7.03	5.25m

Courtesy SpeedEndurance.com

Points	Standing Long Jump	Stand Triple Jump	2 Hops Step & Jump	2 Hops 2 Step & Jump	2 Hops 2 Steps & 2 Jumps	5 Spring Jumps	Stand 4 Hops & Jump	Run 4 Hops & Jump	25m Hop in secs	5 Stride Long Jump
49	2.08m	6.62m	8.00m	10.26m	11.88m	10.97m	11.17m	15.08m	7.04	5.18m
48	2.05m	6.55m	7.92m	10.15m	11.73m	10.87m	11.07m	14.93m	—	5.13m
47	2.03m	6.47m	7.84m	10.05m	11.58m	10.76m	10.97m	14.78m	7.05	5.07m
46	2.00m	6.40m	7.77m	9.95m	11.42m	10.66m	10.82m	14.63m	—	5.02m
45	1.98m	6.32m	7.69m	9.85m	11.27m	10.56m	10.66m	14.47m	7.07	4.97m
44	1.95m	6.24m	7.61m	9.75m	11.17m	10.46m	10.51m	14.32m	—	4.92m
43	1.93m	6.17m	7.54m	9.65m	11.07m	10.36m	10.36m	14.17m	7.08	4.87m
42	1.90m	6.09m	7.46m	9.55m	10.97m	10.26m	10.21m	14.02m	—	4.82m
41	1.87m	6.01m	7.39m	9.44m	10.87m	10.15m	10.05m	13.86m	7.09	4.77m
40	1.85m	5.94m	7.31m	9.34m	10.76m	10.05m	9.90m	13.71m	—	4.72m
39	1.82m	5.86m	7.23m	9.24m	10.66m	9.95m	9.75m	13.56m	8	4.67m
38	1.80m	5.79m	7.16m	9.14m	10.56m	9.85m	9.60m	13.41m	—	4.62m
37	1.77m	5.71m	7.08m	9.04m	10.46m	9.75m	9.44m	13.25m	8.01	4.57m
36	1.75m	5.63m	7.01m	8.94m	10.36m	9.65m	9.34m	13.10m	—	4.52m
35	1.72m	5.56m	6.93m	8.83m	10.26m	9.55m	9.24m	12.95m	8.02	4.47m
34	1.70m	5.48m	6.85m	8.73m	10.15m	9.44m	9.14m	12.80m	—	4.41m
33	1.67m	5.41m	6.78m	8.63m	10.05m	9.34m	9.04m	12.64m	8.03	4.36m
32	1.65m	5.33m	6.70m	8.53m	9.95m	9.24m	8.94m	12.49m	—	4.31m
31	1.62m	5.25m	6.62m	8.43m	9.85m	9.14m	8.83m	12.34m	8.04	4.26m
30	1.60m	5.18m	6.55m	8.33m	9.75m	9.04m	8.73m	12.19m	—	4.21m
29	1.57m	5.10m	6.47m	8.22m	9.65m	8.94m	8.63m	12.03m	8.05	4.16m
28	1.54m	5.02m	6.40m	8.12m	9.55m	8.83m	8.53m	11.88m	—	4.11m
27	1.52m	4.95m	6.32m	8.02m	9.44m	8.73m	8.43m	11.73m	8.06	4.06m
26	1.49m	4.87m	6.24m	7.92m	9.34m	8.63m	8.33m	11.58m	—	4.01m
25	1.47m	4.80m	6.17m	7.82m	9.24m	8.53m	8.22m	11.42m	8.07	3.96m
24	1.44m	4.72m	6.09m	7.72m	9.14m	8.43m	8.12m	11.27m	—	3.91m
23	1.42m	4.64m	5.99m	7.61m	9.04m	8.33m	8.02m	11.12m	—	3.86m
22	1.39m	4.57m	5.89m	7.51m	8.94m	8.22m	7.92m	10.97m	8.09	3.80m
21	1.37m	4.49m	5.79m	7.41m	8.83m	8.12m	7.82m	10.82m	—	3.75m
20	1.34m	4.41m	5.68m	7.31m	8.73m	8.02m	7.72m	10.66m	—	3.70m
19	1.29m	4.26m	5.58m	7.21m	8.63m	7.92m	7.61m	10.51m	9	3.65m
18	1.26m	4.19m	5.48m	7.11m	8.53m	7.82m	7.51m	10.36m	—	3.60m
17	1.24m	4.11m	5.38m	7.01m	8.43m	7.72m	7.41m	10.21m	—	3.55m
16	1.21m	4.03m	5.28m	6.90m	8.33m	7.61m	7.31m	10.05m	9.01	3.50m
15	1.19m	3.96m	5.18m	6.80m	8,22m	7.51m	7.21m	9.90m	—	3.45m
14	1.16m	3.88m	5.07m	6.70m	8,12m	7.41m	7.11m	9.75m	—	3.40m
13	1.14m	3.80m	4.97m	6.60m	8,02m	7.31m	7.01m	9.60m	9.02	3.35m
12	1.11m	3.73m	4.87m	6.50m	7.92m	7.21m	6.90m	9.44m	—	3.25m
11	1.09m	3.65m	4.77m	6.40m	7.82m	7.1lm	6.80m	9.29m	—	3.14m
10	1.06m	3.58m	4.67m	6.29m	7.72m	7.01m	6.70m	9.14m	9.03	3.04m
9	1.04m	3.50m	4.57m	6.19m	7.61m	6.90m	6.60m	8.99m	—	2.94m
8	1.01m	3.42m	4.47m	6.09m	7.51m	6.80m	6.50m	8.83m	—	2.84m
7	0.99m	3.35m	4.36m	5.99m	7.41m	6.70m	6.40m	8.68m	9.04	2.74m
6	0.96m	3.27m	4.26m	5.89m	7.31m	6.60m	6.29m	8.53m	—	2.64m
5	0.93m	3.20m	4.16m	5.79m	7.21m	6.50m	6.19m	8.38m	—	2.53m
4	0.91m	3.12m	4.06m	5.68m	7.11m	6.40m	6.09m	8.22m	9.05	2.43m
3	0.88m	3.04m	3.96m	5.58m	7.01m	6.29m	5.99m	8.07m	—	2.33m
2	0.86m	2.97m	3.86m	5.48m	6.90m	6.19m	5.89m	7.92m	—	2.21m
1	0.60m	2.89m	3.75m	5.38m	6.70m	6.09m	5.79m	7.77m	9.06	2.13m

performance-based program, in the age of specialization, there are certain similarities between the two that make the utilization of testing a wise decision.

In both instances testing is simple to initiate. The resources needed, be that space, time or expense are minimal. The initial investment of equipment (stubby hurdles, Med balls, etc.) are reusable from test date to test date but can also be incorporated into one's daily and weekly practices.

Both test procedures offer flexibility. Depending on one's coaching goals and developmental philosophy, either program can be tailored to one's desired needs. One of the beauties of this program is that the results generated will give solid evidence as to whether one's plan has produced the desired results or outcomes.

Both testing procedures offer the athlete a series of challenges which are consistent with the nature of the sport. For the younger athlete the novelty of producing marks that can document growth and development may be all that is necessary to pique interest. The older athletes, understanding the value of applied skills tested, can work towards achieving the personal perfection necessary to improve.

BOTH TESTING PROCEDURES OFFER THE ATHLETE A SERIES OF CHALLENGES WHICH ARE CONSISTENT WITH THE NATURE OF THE SPORT.

The multiple skills the youth are tested on tacitly refutes the problematic belief in early specialization. For the older athlete, the varied drills can help promote multilateral development that can have far-reaching effects in terms of injury prevention and promote anatomical adaptation. Anatomical adaptation bolsters the soft tissue holding elements of the muscles and joints, which in turn counteracts the chronic strain of repetitive practice. In sum, career-long attention to multi-lateral development can play a significant role in career longevity.

A final point of emphasis is that these testing skills can be fun. While fun is one of the preeminent goals of a youth-oriented program, it also plays an important role for the older athlete. Mastery of physical and personal challenges is the bedrock of competence and promotes a fearless competitive attitude. Occasional use of a testing program can break up the monotony of practice, often offer a vehicle for motivation and promote both diligence in preparation and excellence in technical execution. Additionally, not the least of which, is the chance for strengthening the teaching bond between coach and athlete but also promoting learning from athlete to athlete thereby strengthening the team concept within the sport.

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MENTAL REHAB

BY HANNAH WINTER

Hannah Winter examines the psychological consequences of injury and outlines strategies athletes can use to cope more effectively.
This article first appeared in the March 28, 2019 issue of *Athletics Weekly.*

Despite the best efforts of athletes and coaches, injuries are unfortunately commonplace in sport. Athletes often concern themselves mostly with the physical aspects of rehabilitation. However, athletes will often report a number of negative psychological consequences when injured.

What's more, while an athlete may be physically ready to return to sport and competition after injury, we know that this is not the same as being psychologically ready. With this in mind, effective injury rehabilitation and a successful re-entry into athletics after an injury requires a focus on both the physical and psychological factors.

PSYCHOLOGICAL RESPONSES TO INJURY

People respond to injuries in various ways. Athletes understandably can be incredibly upset and frustrated when sidelined. There is often a lot of uncertainty, for example, in understanding how long an injury will take to recover from, how it will impact sporting ambitions or whether it will be career-ending. For some, having an injury is therefore incredibly debilitating and is viewed as a disaster. Depression, frustration, stress, anxiety, anger, rehabilitation compliance problems, poor concentration and exercise addiction are some of the emotions and behaviors injured athletes report. For some, responses can be clinically significant. In one study, 24% of coaches said they had referred an athlete for counselling following an injury.

In contrast, some people when injured react more positively. For them, an injury is seen as a challenge to overcome, an opportunity to demonstrate courage or even as a relief to have a break from training. Developing effective ways of coping with injury setbacks is therefore important to help navigate what can be a difficult time.

A CULTURE OF RISK

It can be a challenge for injured athletes to express how they are truly feeling about an injury. Certain beliefs concerning accomplished athletes and successful injury rehabilitation are often drilled in by coaches, parents and media to an injured athlete. For example:

- **Demonstrate mental toughness and give 110%:** this can lead athletes to overtrain and risk further injury and/ or return to sport too quickly after an injury.
- **Play through pain:** this can

make it hard for athletes to understand what pain should be ignored and what should be treated more seriously.

- **A focus only on performance:** this can make athletes only feel valued as performers and encourage injured athletes to ignore both the precautions needed for a full recovery and what's needed to enhance their wellbeing.

Coaches, parents and sporting organizations therefore have a role to play in determining what is in the best interest of injured athletes to help them reach their full potential and be mindful that those previously-mentioned beliefs may exist within the injured athlete.

COPING STRATEGIES

If you are faced with an injury, employing strategies to help you cope with the psychological impact may therefore be just as important for your recovery as the physical rehabilitation.

A response to an injury is very individual and it is important to work out what strategies are beneficial for you. As with any new skill acquisition, these techniques can take time to put into practice and lead to desired outcomes.

Here are some examples of evidence-based coping strategies that have been found to be effective in managing the psychological challenges that can come with injury:

1. Educate yourself: research shows that people who take time to really understand their injury cope better. Talk to your doctor, physiotherapist or surgeon and learn about your injury and the rehabilitation process. This can help you become more engaged in your recovery and it can help you feel more empowered in the process.

MARK SHEARMAN

Injuries can strike—make sure you have coping strategies

A RESPONSE TO AN INJURY IS VERY INDIVIDUAL AND IT IS IMPPORTANT TO WORK OUT WHAT STRATEGIES ARE BENEFICIAL FOR YOU.

2. What's in your control: be really clear about what is in your control versus what's outside with regard to your injury and recovery. Write them down and place the list somewhere visible. Then each day focus on what is in your control.

3. Talk about it: don't go through an injury alone. Social support is often critical in the rehabilitation process, particularly with severe injuries. Find a friend, family member or teammate to listen to your concerns and provide emotional support when needed. This is often most effective if the person you are talking to understands your sport. Coaches can also set up injury support groups to enable injured athletes to have a safe space to talk openly about their injury experience.

4. Don't isolate yourself: staying involved with your sport can, for some, be helpful. For others, however, it can have a negative impact on their emotional state. If you think it would be helpful for you, you can look for ways that you could be involved in your sport, for example, by coaching or mentoring other athletes.

5. Find a mentor: research has shown that, if your recovery is going to take a long time, finding a peer mentor - someone who has successfully recovered from

a similar injury - can be helpful.

6. Focus on the long term: with an injury, it can be very tempting to push through pain or go back to training too quickly. However, it is important to focus on your long-term objectives and not the short-term fear of losing fitness.

7. Set realistic goals: be flexible with your goal for recovery. Depending on the nature of your injury, understand that rehabilitation can at times be slow and have setbacks. Once you're ready to return to sport, set new and realistic goals to avoid disappointment. It may not, at least initially, be possible for you to compete at the level you did previously.

8. Track your progress: keep a daily or weekly diary on your rehabilitation progress. Writing in a diary each day about the current state of your injury can help see the progress you are making recovery-wise. This can be particularly helpful if you are out of your sport for a long time.

9. Mix up your rehabilitation: physiotherapy exercises may be needed for a long time. Completing the same routine for weeks or months on end can be boring. Mixing up rehabilitation choices can improve motivation and adherence.

10. Consider the positives: ask yourself whether there are any positives to have arisen from the injury. For example, have you been able to come back stronger than before? Have you been able to work on a weakness? Or perhaps you were able to spend more time with your friends and family. Become clear on any positives and write these down.

MARK SHEARMAN

Mixing up your rehab and a mentor will boost recovery

11. Positive self-talk: think about your inner dialogue and whether you are having helpful or unhelpful thoughts about your injury and recovery. Negative self-talk can be self-defeating and prevent rehabilitation adherence. Look for ways to develop your inner dialogue to be self-enhancing.

12. Practice relaxation strategies: breathing techniques can help manage any anxiety and frustration throughout the injury process. One example is box-breathing: breathe in for a count of four, hold for a count of four, breathe out for a count of four and hold for a count of four; repeat five times.

There is no doubt that injuries can be incredibly frustrating, leading to a loss of identity and confidence. However, when approached correctly, psychological adjustment can be healthier and an athlete may more readily return to higher levels of performance.

Understanding what coping strategies work for you is important. Even if you are not currently injured, formulating a clear plan on how you would respond to an injury should one arise can help minimize confusion when such a time comes.

Lastly, it is important to note that, for some, professional support may be helpful if the psychological consequences are severe, particularly if they have suffered a career-ending injury.

Hannah Winter is a sport and exercise psychology consultant. Go to hannahwinter.co for more information and contact details.

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USATF COACHING EDUCATION

USATF CALENDAR OF SCHOOLS

https://www.usatf.org/programs/coaches/calendar-of-schools

Jan 12-14	*Level 1 - Zoom #2023-2 (Mountain Time)*
Jan 26-29	*Level 1 - Zoom #2023-4 (Eastern Time)*
Feb 2-4	*Level 1 - Zoom #2023-5 (Pacific Time)*
Feb 23-25	*Level 1 - Zoom #2023-8 (Eastern Time)*
March 1-3	*Level 1 - Zoom #2023-9 (Central Time)*
March 15-17	*Level 1 - Zoom #2023-11 (Eastern Time)*

Information on the Level 2 Schools, Cross Country Specialist Course, Emerging Elite Coaches Camp, and other coaching education opportunities will be available in the spring.

UPCOMING USATF CHAMPIONSHIP EVENTS

https://www.usatf.org/events

Jan 20	*USATF Cross Country Championships – Richmond, VA*
Jan 21	*USATF Marathon Race Walk Mixed Relay Championships – Santee, CA*
Jan 27-28	*USATF Indoor Combined Events Championships – Indianapolis, IN*
Feb 3	*U.S. Olympic Team Trials – Marathon – Orlando, FL*
Feb 16-17	*USATF Indoor Championships – Albuquerque, NM*
Feb 24	*USATF Masters 5km Championships – Atlanta, GA*
March 2	*USATF 15km Championships – Jacksonville, FL*
March 8-10	*USATF Youth Indoor Championships – Louisville, KY*
March 21-24	*USATF Masters Indoor Championships – Chicago, IL*
April 7	*USATF 10 Mile Championships – Washington, D.C.*

VERIFY YOUR STANDING ON THE USATF COACHES REGISTRY FOR 2024

USATF members are encouraged to start 2024 off by verifying their compliance with USATF Coaches Registry requirements. Don't be caught off-guard at 2024 USATF Championships with a lapsed requirement. Members must be current with all USATF Coaches Registry requirements to receive a coach credential at USATF Championships. Members may verify their status by querying the public list with their name.

A member whose name is not listed on the public Coaches Registry List should login to their membership profile on USATF Connect to take action. A green, current status must be displayed under each individual requirement (Membership, Center for SafeSport Training, Background Screening, and Coach Certifications). All requirements must be current through the last date of competition to qualify for a registered coach credential.

Please be advised U.S. Center for SafeSport training is an annual requirement valid for a 365-day period and NCSI background screens are valid for two years from date of acceptance.

In addition, members must be listed on the club profile and/or designated by declared athlete during the specified USATF Championship to be credential eligible.

A link to the public USATF Coaches Registry List and requireme
nt information is accessible from USATF.org > Programs > Coaches under the Quick Links heading.

https://www.usatf.org/programs/coaches/coaches-registry

RECAPPING THE 2023 USATF END OF YEAR AWARD WINNERS

At the 2023 USATF Night of Legends on Saturday, December 2, 2023, in Orlando, Florida as a part of the USATF Annual Meeting top performers from the year were celebrated.

2023 Jackie Joyner-Kersee Female Athlete of the Year Award: Sha'Carri Richardson

A dominant Sha'Carri Richardson took over the world stage in 2023 and gave a glimpse at what was to come later in the season with a windy 10.57 (+4.1) at the Miramar Invitational early in the season in April. 23-year-old Richardson had 12 wind-legal sub-11 clockings in the 100 through the 2023 season, capped off by a 10.65 to take gold at the World Athletics Championships in Budapest and move her to No. 5 on the world all-time performer list. Throughout the season Richardson took the 100 crown at three separate Diamond League meetings and won the USATF Nike Women's 100 title in 10.82. With Budapest 200 bronze, Richardson became the first American woman to medal in both sprints since Carmelita Jeter took gold and silver in 2011. In one of the most memorable moments of Budapest 23, Richardson anchored the U.S. women's 4x100 to gold in a world-leading 41.03 to pull off a glorious USA 4x100 sweep.

2023 Jesse Owens Male Athlete of the Year Award: Noah Lyles

For the second season in a row, Noah Lyles went undefeated in the 200, tallying six sub-20 clockings throughout the season including a world-leading 19.47 at the London Diamond League. His ability to excel from the 60 to the 200 proved to many that Lyles is not solely a 200 specialist. In a span of six days at the World Athletics Championships Budapest 23, Lyles added three world titles to his already-impressive resume to become a six-time world champion at the age of 26. At Budapest 23, Lyles became the third American man in history to complete a successful sprint triple to join the ranks of Tyson Gay and Maurice Greene. He clocked a 9.83 to win the 100, followed by a 19.52 for gold in the 200 - his third straight in the event, and anchored the 4x100 in a world-leading 37.38 for triple the glory.

Dennis Mitchell Named 2023 USATF Nike Coach of the Year

A laundry list of accomplishments by Dennis Mitchell's athletes earned him the honor of 2023 USATF Nike Coach of the Year. Mitchell guided Sha'Carri Richardson to a dominant, breakthrough season in both the 100 and 200 as she clocked personal bests of 10.65 and 21.92 and secured three world medals. He coached TeeTee Terry to yet another world championships relay appearance where she helped to secure a gold in the 4x100 at Budapest, and he guided Kenny Bednarek to a fifth-place finish in the 200 at that meet. Bednarek was the Diamond League Final runner-up in the 200 at Eugene.

Shawnti Jackson Named 2023 USATF Youth Athlete of the Year

North Carolina high schooler Shawnti Jackson burned up the track indoors and outdoors in 2023, setting three national high school records and winning gold in the 200 at the Pan American U20 Championships before anchoring Team USATF to an American U20 record and gold in the 4x100 relay. Jackson was fifth in the Millrose Games 60, taking down the high school record with a 7.16, and she set the 300 record at Virginia Beach in January with a 36.63 clocking. At the Music City Track Carnival in Nashville, she sped to a 10.89 win that gave her the prep 100 record. A semifinalist in the open 100 at the Toyota USATF Outdoor Championships, Jackson returned to win the U20 200 title in a then-PB 22.48.

Hitchings, McDonald Named 2023 USATF Masters Long Distance Running and Track and Field Athletes of the Year

For the second year in a row, Jenny Hitchings has been named the USATF Masters Long Distance Running Athlete of the Year. Having turned 60 during the 2023 season, Hitchings moved from the 55-59 age division to the 60-64 division and uniquely set records in both divisions in a single season. In April, Hitchings reclaimed the world 55-59 marathon record at 2:45:27, breaking the 15km, 20km, 25km, and 30km American records in the division along the way.

Sue McDonald went on a world record-setting spree in 2023, setting six WMA outdoor records and two indoor records across an array of events. McDonald opened her campaign with WMA records in the W60-64 800 (2:25.72) and 1500 (5:08.88) at the World Masters Indoor Athletics Championships in Torun, Poland. She then took three golds, two with WMA Record performances, at the USATF Masters Championships in Greensboro, North Carolina, winning the 400 in 62.34, the 800 in 2:29.97, and the 300 hurdles in 48.89. For good measure she earned silver in the 200.

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