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TEAM USATF at World Athletics Championships - Budapest 23

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Fall 2023 — 245

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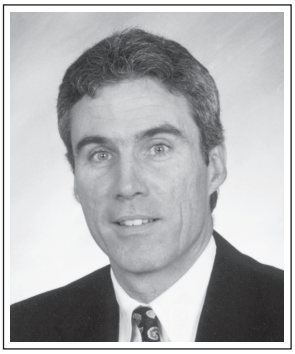
FROM THE EDITOR

RUSS EBBETS

ABC'S



There always seems to be that semi-dramatic moment when a TV doctor holds an x-ray overhead to a florescent light, gives a quick 5-10 second scan and miraculously arrives at a definitive diagnosis. It seems improbable one could translate the black, white and 50 shades of gray that quickly, accurately and profoundly.

When you learn to read a radiograph (an x-ray) you are fed a constant diet of "normals" (technically, unremarkable radiographs). These normals present textbook examples of healthy skeletal anatomy and surrounding soft tissues. They also represent the fundamentals of that discipline. One learns to evaluate these fundamental presentations of skeletal anatomy by running through the ABCD's (alignment, bones, cartilage and destructive patterns) again and again and again. It seems like a crazy way to teach something, but there is method to the madness.

Imagine for a moment your daily diet consisted of the same cereal, meal after meal, forever and ever. Then one day, someone slipped a raisin in the mix. It would stick out like a sore thumb. You might not be able to identify what the little deviant was but you'd know it wasn't a cornflake.

The same happens with the steady diet of normal x-rays. Any abnormal alignment, disruption in the bony contour, asymmetric cartilage spacing or destructive patterns would stick out like sore thumbs. These aberrant patterns may need to be confirmed with subsequent physiologic tests but simply by themselves they indicate that something is "not right."

Conscientious participation is one of the fundamental pillars of training theory. Conscientious participation is defined as knowing what you are doing and why you are doing it. The technical model for an event is a collection of the accepted movement patterns that use the various sport sciences to validate their use. Proper stance, and positioning of one's hips, torso and arms can all be justified by referencing the biomechanical forces these positions can generate.

I was always bothered when an athlete complained that the dynamic warm-up of a practice was boring. Somehow, either I, or the athlete had missed a step along the way, and that misstep forecasted stagnation. We were going to get the chance to retrace, re-emphasize and repeat, coaching fundamentals 101.

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EDITORIAL COLUMN

Continued from page 7826

Track & field is a technique dominated sport. Even for a novice spectator the execution of movements clearly differentiates a run from a jump or a throw. Track & field is characterized as an applied sport where the execution of a skill is devoid of physical contact (ideally) or influence of one's competition (at least on paper). All this makes perfection of one's technique via mastery of fundamental movement patterns all the more critical.

Regardless of one's discipline, pre-planning of a dynamic warm-up allows the coach to hone in on basic skills, fundamental skills that prepare for and allow for the nuances of more sophisticated technical models to emerge as the athlete physically matures. Postural, core and dynamic stability can be refined to compliment changes in growth and speed and strength. Developed in conjunction with Maslow's age-old whole-phase-whole model, improvements can result in an ever-expanding circle of competence, success and potentially competitive dominance.

There is a pithy maxim that amateurs practice until they get it right, while professionals practice until they cannot get it wrong. A large part of what gets "practiced" is fundamentals. For the athlete, thoughtful repetition of fundamentals creates motions and motor patterns that are one's default movement patterns. And come the extreme tension of high stakes performance one's default actions are displayed through force of habit and force of will.

Fundamentals learned right are like your shadow, they'll go where you go and they'll go as far as you go. So, whether your ABC's are alignment, bones and cartilage or agility, balance and coordination the fact remains that no matter where the fundamentals take you they will always be with you.

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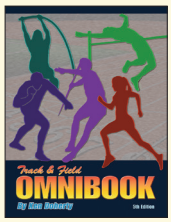

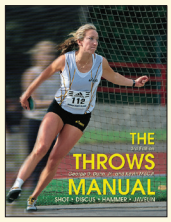

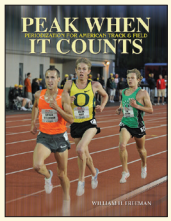

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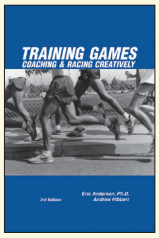

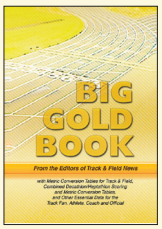

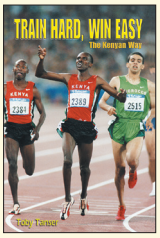

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"THE AMERICAN METHOD" TRIPLE JUMP ROUNDTABLE

THIS IS PART 2 OF THIS WIDE-RANGING DISCUSSION ON TRIPLE JUMPING. PARTICIPANTS ARE ED ROSKIEWIC (ER), BOO SCHEXNAYDER BS), NADIR SIMCHAMED (NS), AND ILIYAN CHAMOV (IC), RUSS EBBETS, COORDINATOR

TECHNIQUE ANALYSIS

The evolution and proliferation of video recording over the last 25 years has changed from a monumental undertaking to the ease of a swipe of the finger. How much video of technique do you use on a daily or weekly basis? Is there a set "video day?" Do you let the athletes video themselves?

IC — Video recording is a great tool. It sometimes can be a burden if used too much. We use recording in the weight room measuring bar speed, force output etc. During jumping sessions I'm trying to stay 50/50 or even less with recording because most of the time athletes are far away on the runway during competition and we don't have the chance to watch video during competition. I want them to be able to analyze and comprehend verbal cues versus imaging all the time.

NS — Video recording is now very much part of every technique session and competition. Athletes are constantly, recording each other, posting on social media outlets and are savvier and more involved than in years past. I will do instant review during a technique session when possible as well as setting video sessions to go over their jumps along with a comparative analysis of elite and world class athletes.

ER — I use my iPhone to film and give instant playback regularly. I also encourage athletes to watch videos on YouTube.

BS — As a coach I think it's important to develop the coaching eye, and it's important to let athletes "feel", so I try not to use video in practice. I will video practice and review it afterwards to check myself and for use with the athletes. Athletes sometimes see what they want to see, and they have a lot of people in their ears, so I like to join in and guide their video examination of themselves. In most cases having them watch videos

of other people doing things they are working on is more valuable than watching themselves.

Are there any formulas you use to predict triple jump abilities (or deficiencies) (i.e. — .75 x LJ distance x 3 = triple jump) when comparing the long jump versus the triple jump? Or do you feel these conversions have a limited value?

NS — I do not use specific formulas, but I look at preliminary jumping/power tests to assess an athlete's ability to triple jump. This would be based on a natural ability to execute specific plyometric exercises, as well as rhythm and acceleration abilities.

ER — Limited value.

BS — None are perfectly accurate, but a jumper should aspire to LJ x 2.2.

IC — We as coaches are living in conversions constantly. With every run, jump, or lift we think how is this converting to performance? In terms of long jump to triple jump I see limited value in conversions. I believe the triple jump and long jump are two completely different events. This is why we don't see many athletes competing in both events at world championships and Olympic Games. There are very few athletes as an exception, but it's just an exception, nothing more. An extremely capable, talented, and well coached high level long jumper will be able to do not only a good triple jump, but probably most speed power events.

DON MCADAM

Willie Banks (USA) 2nd phase.

How extensive is your weight routine? Can you contrast a "weight day" from your pre-season training day with what is done in the later portion of a competitive season?

ER — Most gains in weight training should be made in the off season and early season. The focus of in-season training should be to maintain those gains.

BS — Nearly all of my key weight training days involve only three exercises—an Olympic lift, a gross lower body lift and a gross upper body lift. This never changes. A short list allows more quality. The biggest difference between early preseason and in-season lifting is that I discontinue heavy, slow things in-season in favor of ballistic type lifting. I also strictly maintain a polarized philosophy in the Olympic lifting program in-season (lifting really light or really heavy, nothing in the middle zones). Light stuff is fast and builds power. Heavy stuff

builds strength. Middle zone stuff just gets you tired without doing either well.

IC — The weight room is a very crucial part of our preparation. In pre-season we do little bit longer lifts with addition exercises of event specific exercises. In preseason we use relatively low percentages with around 75-80% resistance with about 5-6 sets up to 5-6 reps for the Olympic movements. Closer we are to the competition things change drastically. We are going up to a 100% percent effort in very few reps and sets. If the competition season is very long (typically for a professional athlete) there are more varieties we use. Another big part of weightlifting prior, or during competitions, is bar speed. I always request maximum efforts over few sets. If the bar speed starts slowing down it is a sign we have to stop increasing the weights. In the end of the day, we are lifting so we can move fast on the track. Bar speed is a priority.

NS — Weight routines are generally three sessions a week in the preseason to two times per week during the competitive period. Length of each session is approximatively an hour with complex and contrast training as a preferred method.

Regarding plyometrics – Do you use them the day after your heavy lifting?

BS — I involve plyometrics on big sprint/lift days. This ensures days that are very demanding on the nervous system, but also ensures the presence of days that might be tough in other ways, but are easy on the nervous system.

IC — Typically, yes. Depends in what part of the training cycle we are. I am a huge advocate of post activation potentiation, and all my training is designed around it. How the afternoon session corresponds to the morning session. I always design weightlifting based on what we have planned for the next 24-48 hours on the track.

NS — In the context of a light to heavy or heavy to light complex/contrast training, we will use plyometric routines accordingly. In other words, light plyos on a heavy lift day, versus more intense plyos on a lightweight session. The level and state of the athlete would also help quantify and determine if additional recovery time is needed between sessions. Using plyometric work immediately after resisted work is my preferred method to create the potentiating effect that a jumper needs.

ER — I view plyometrics as a part of weight training routine.

How do you measure the quality of plyometric effort – by time of the efforts or distance covered in the drill or both?

IC — I look more time of the effort in fall (early preparation), number or contacts is priority. Further in the season distance is way more important than the volume.

NS — I would say a little bit of both. It depends if the plyometric work is done independently or not.

ER — It depends on the drill but I would say both.

BS — I don't measure everything but its more about distance. Timing plyometrics always confused me… better performances result in more flight time, therefore slower times. A big part of long-term triple jump improvements is to understand that the better jumps feel slower, not faster. As you improve, the contrast between the rhythm of the fast run and the slow phases grows greater and failure to understand that is a big impediment to progress.

In a four-year cycle (freshman to senior) how much more aggressive do you become in terms of quantity? And do you use the number of ground contacts to quantify efforts?

I ACTUALLY DROP VOLUMES AS ATHLETES GET OLDER AND STRONGER, CONSTANTLY GRAVITATING TO MORE QUALITY (RATHER THAN QUANTITY)

NS — Not so much in quantity but rather in quality and intensity. I usually stop an athlete from an intense work once signs of fatigue are visible.

ER — It depends on the individual athlete. Everyone responds differently to various components of training. In general, I do quantify by ground contacts.

BS — I actually drop volumes as athletes get older and stronger, constantly gravitating to more quality (rather than quantity) and intensity-based training over the course of a career. Great athletes produce bigger forces, therefore they create more internal damage when training and thus should do

less. They require more recovery time. Young athletes aren't really strong enough to hurt themselves badly yet, so they can do more and more often. The impression that high level athletes do huge volumes is faulty. They train with impressive intensities, with less volume and lower densities.

IC — Second to third year are typically the years with the most volume. This is the time they respond best to training and improvements. Senior year is typically more equal with the Jr. year. This also depends how many years of experience the athlete has. If someone comes to us as World Junior Champion and has trained about 6-7 years prior, I am more steady with them. If athletes are coming from a multi-sport experience and not enough experience in jumping events I start increasing the volumes through the years.

INJURY PREVENTION

What measures do you take to protect the athlete's feet, especially the athlete's heel?

ER — Work on soft surfaces. Use training shoes for drills and training. Very little jumping in spikes. Limit opportunities to jump in competition. Almost all technique work with short approach run (1 to 6-step approach). Very carefully monitor overall volume of training.

BS — In track, almost all injures are rooted in foot immobility. The collisions are always between the feet and the ground, soft tissues tighten, bones quit gliding, and the way forces are transmitted up the leg are altered in ways that produce most of your typical track injuries. I use barefoot stuff, trying to get the foot and ankle moving in three planes and getting the individual digits to work independently. I supplement this with soft tissue and chiropractic work on the feet. Good technique should prevent heel bruises. Contrary to popular belief you don't get a heel bruise by landing on the heel, but by landing on your toes with the subsequent collapse/heel slap. I do use heel cups at times. I really like the old school hard cups, they distribute forces away from the bruised area. The padded ones don't, but I have had a couple of athletes who put a hard cup inside a padded one with OK results.

IC — In the fall we stay more than a month on a sand surface. We train every single day, bare feet on sand. That includes our warm-up, sprint drills, sprints, plyometrics, and circuit workouts. I believe that creates great qualities for the Golgi tendons and works as an injury preventative tool for the season.

Heel protection is purely technical execution of the drills. There are no bruised heels that come from overuse. Overuse in that area is a result of wrong mechanics of the foot placement.

NS — I would emphasize mainly proper technique and good posture and alignment starting at low or moderate intensities. Having the athlete to be technically sound is critical to avoid injuries before progressing to higher and more intense work. Heel cups can also be used initially as a safety measure if the athlete is not quite proficient..

Do you do any screening for things like valgus collapse (knock knees) of the knees prior to doing plyometrics or depth jumps and how do you rectify this? With elastic bands around the knees or some other method?

BS — I address this as I take the athletes through the remedial jump work that precedes high level triple jump training. No special strategies other than a sound, patient progression of intensities and constantly insisting that landing mechanics are sound. I don't like the bands, I think they are a crutch and at some point, you have to do it without them…

IC — Screening is happening constantly through every session. Mostly in the weight room. If you want to see weakness in an athlete they are more prominent in the weight room. By consistently advising and coaching proper mechanics we are correcting/addressing valgus position. I stay away from elastic bands and static exercises because they are very easy to mask or control without velocity. The only time I might use bands is for rehab purposes.

NS — An in-depth screening is done by our medical staff. They will then implement a specific plan to address and correct the problem in collaboration with our strength and conditioning staff and event coaches. The use of resistance bands as you mentioned while performing squats and various hip and thigh exercises would help stabilize and realign the knees along with specific stretching exercises.

What are three common injuries you see in the TJ and what do you do to prevent them?

NS — Knees, ankles, and heel bruises are common injuries. Pre-

vention will start with technical efficiency and insisting on executing specific exercises properly. Also, addressing weaknesses, coordination, and balance issues through core and specific strengthening exercises. Finally, having a progressive approach in their development before introducing more complex and demanding exercises.

ER — Shin splints, heel bruise, hip pain.

IC — In no particular order I would say ankle problems, patella tendinitis, and hamstrings. With ankles and patella tendinitis I believe most of the time there are technical or mechanical reasons for the injuries, not weakness. In very few instances patella tendinitis can be provoked by muscle imbalance or overuse of the quadriceps. I frequently use myofascial releases in my sessions and stretching techniques. For all "anatomy trains" I do a lot of diagonal work which I strongly credit as preventing injuries.

BS — I don't see any real difference in triple jump and other events as far as injuries except for the prevalence of heel bruises and other impact related foot issues related to poor landing/takeoff contact patterns.

As with all the jumps the chance to get "all jumped out" is an ever present reality. How do you ensure peak fitness and progressive development while at the same time not taking the "spring" out of the athlete's legs.

ER — In my mind, keeping athletes healthy is the key to success. I coach with the philosophy that anything good is built slowly. I always lean toward undertraining versus overtraining. I consistently ask our athletes how they are feeling.

IC — I spend a lot of time in periodization. Every season I take a countless amount of notes re training, how athletes feel and when they perform the best. Starting the new season periodization, I go over the notes in deep detail and base the practice on positives and negatives from the previous season by trying to avoid underperformance or injuries. Within the college season it is unavoidable for athletes to experience down time or not feeling great. It's important to have proper recovery and adjustments if needed.

BS — I think it comes from skilled, quality (not quantity) based programming. Dead-legged feelings result when programs value volume more than intensity. The level of intensity you safely achieve in training is the level of performance you can expect. You can't say the same about volume.

NS — Adjusting volume and intensities as we approach peak season is crucial. Through a well periodized plan, athletes need to "deload" and taper down before major championship season and get the overcompensation effect needed to reach peak form. Having quality and progressive training blocks throughout the season, while allowing for rest and recovery is essential.

COMPETITION

Subjective feelings of "lightness" on the day of competition can have a positive mental effect. Are there any practices such as wearing weighted clothing or having a brick in one's backpack so that when stripped down the athlete feels lighter or springier?

IC — This feeling is simply a result of what is conducted previous days at practice. Post activation potentiation or simply good activation the day/morning before the competition is crucial. I personally bring a weightlifting bar and plates anywhere I can. If my athletes compete in PM we always do activation in AM. If they compete AM we do our weight room activation the evening prior to the meet.

I WOULD APPLY FORMS OF RESISTANCE THROUGHOUT THE WORK WEEK LEADING UP TO A COMPETITION.

BS — I've never advocated it but I inherited a few athletes who did such things. I was cool with it.

NS — I would apply forms of resistance throughout the work week leading up to a competition. Using vests, bullet belts, sleds, etc., to have the sort of neuromuscular effect that is needed but would not necessarily use it on the day of competition.

ER — No. Proper rest and tapering will make the athlete feel "light".

In a six-jump series what tactics do you prefer? Do you like to see your athletes "nail" the first jump to put pressure on the competition or do you prefer to build performances throughout the competition?

BS — We should do fairly well on the first jump, we practiced for it all week! But great jumpers are taking chances and going for it... which means they will miss occasionally. Looking at any high-level triple jump competition, the jumpers who finish high will usually show two great jumps, not six. So, I look at the competition as a two-peak thing, trying to set the athlete up to hit a big jump early and putting them in position to hit number 6 if they need to. If things go wrong, I adjust.

NS — Building performances throughout the competition is preferable. Although "nailing" the first jump to send an early message and put pressure on your competitors is important, but I would prefer to see athletes push each other, battle it out and rise to any challenge throughout the competition until their last jump. I have always encouraged my athletes to stay competitive until the competition is over; therefore, teaching them to persevere and be resilient until the end. There is always magic that happens on the sixth jump when the pressure is on!

ER — In my opinion, that is overthinking competition. Prepare, proper focus, compete with enthusiasm.

IC — Every single jump is a 100% effort and maximum result is expected.

Do you modify an athlete's starting mark as a competition progresses?

NS — Absolutely. There are many variables here. The state of the athlete as they get looser and faster as the competition progresses, the wind factor, the adrenaline level, etc. Constant adjustments are needed throughout the competition.

ER — Of course! The mark changes every day based on conditions and the athlete's preparation.

IC — Only if needed. Always targeting to be consistent in the approach through all jumps.

BS — Often yes, but not reactively, it's done with a plan. Usually, I'm backing people up as arousal levels increase, or moving them closer to get their feet under them better.

For competitions that have a qualifying round to be followed a day later by the competition, what activities do you recommend be done between the competitions to help the athlete recover and be prepared for the final of the event.

ER — The training program should involve overall body conditioning. A fit athlete will have the best chance to perform well in all situations.

IC — Very good cool-down with stretching exercises after the qualifying round. If possible and available, a flush massage for faster recovery.

BS — I start with local icing of any minor injuries after day 1. If it feels hot to the touch, I ice it. That's followed by a lukewarm Epsom salt bath. This really produces relaxation, while ice tubs seem to tighten things up. On day 2 I lengthen the warm-up a bit.

NS — More of an active recovery session. Where the emphasis would be on rehabilitation rather than work. Stretching, easy drills and a visualization routines.

Triple jump competitions are conducted in a fairly orderly manner and have their own rhythm (as opposed to a pole vault that can drag on for hours). How do you recommend an athlete maintain focus during a competition? With the banning of electronic devices at the competition site (music, cell phones) do you use anything like flip cards, written affirmations or cue words to help the athlete maintain focus when the coach is not readily available to help out?

IC — I am against music during warm-up or as a motivational/focus method. I see it more as a "crutch" that athletes adapt to and depend on. Focus must be a process that is practiced every day the same way it will be executed at competitions. There are many other exercises for increasing focus, such as visualization, breathing, etc. We stay away from external motivators like music, headphones, flashcards etc.

BS — I'm not sure beginning to end total focus is realistic, so after a jump and the subsequent coaching I advocate a little mental down time, followed by a mental ramp-up for the next trial. Physically moving around in advance of a trial is important not only for warm-up purposes but because it brings about some sense of urgency and, in some cases, burns off some anxiety and nervous energy. Staying task-specific is a must; you can't control what others do.

NS — It is important to fragment the competition and focus on one jump at a time and one phase at a time. I teach my athlete to also

be independent when needed and have an analytical approach of what may have caused a jump to go wrong and how it can be adjusted and corrected. Learning to eliminate all distractions around is also essential by practicing positive self-talk.

ER — No. Proper practice and preparation will set the athlete up for success.

When viewing a competitive jump you have the opportunity to view the jump from the front, the side or from behind. Which do you prefer? What information to you glean from each of these viewing positions?

BS — The side view tells you far more than any other view, but it's easiest to evaluate lateral shifting and rotational components from the front or back. I think it's more important not to stand by the board, but away so you can really take in the whole effort from start to sand.

NS — Views from various planes can be very helpful. Front/back could help in determining how linear the jumper's trajectory is without shifting body position and arm action too far and across the sagittal plane.

A side view would give you a better appreciation of takeoff angle, range and postural integrity throughout the run and each phase of the jump (i.e.: leg extension, foot dorsiflexion upon contact, backward or forward rotation, etc.)

ER — From the side. I run the jump over in my mind and evaluate various pieces that we have been working on.

IC — I prefer observing jumps from the side. In the sagittal plane we see more the effects of the gravitational forces and horizontal velocity displacements. From the transverse plane (front or back) you get information only about lateral twists or rotations. Lateral twists and rotations are also well observed from the sagittal plane.

PROPER PRACTICE AND PREPARATION WILL SET THE ATHLETE UP FOR SUCCESS.

Florida's Jasmine Moore is now a stutter step away from 50 feet. While American men have been a dominant international force for the last 40 years U.S. women have lagged behind in spite of opportunities equal to those of the men. Tiombe Hurd (2001) and Tori Franklin (2022) are the only women to win a triple jump medal at a World or Olympic Championship. Do you have any thoughts on why this has happened?

NS — One major difference with different school of thoughts, such as the European and Cuban systems, is that the triple jump initiation is done at a very young age; therefore, they have an edge on development and maturity in the event compared to their American counterparts.

From a biomechanical and technical standpoint, the base is established early on in these systems and leads to greater proficiency in the event and will result in lesser risk of injuries and eventual success on the international scene.

Another aspect could be attributed to a lack of support and resources once an athlete leaves the collegiate system and its training environment.

Thus, unless there is quality post-collegiate coaching and elite group systems in place, it would be difficult to persevere in this very demanding event.

Having said that, I see a brighter future for U.S. female triple jumpers with the rise of the likes of Jasmine, Keturah, and Tori and a much-improved post-collegiate system where many Olympic training centers and quality private coaching are emerging.

IC — There are many factors for that. I'll highlight a couple. First the women's triple jump event is an event that requires many years of training and experience to master and develop. We see many women triple jumpers at the NCAA stage that performed great and years later they are on the top of the world rankings. Time for development in women triple jump is non-negotiable. The problem is coming from the high school level in USA. Lack of specialization in early ages. Most of the talented female athletes are immediately directed towards other events such as short sprints, long jump and 400m. In some states the triple jump is not even allowed in high schools. This is extremely shocking and disturbing to me as a coach. The best example is the last indoor NCAA Championship. This was the strongest female triple jump competition in U.S. history. Four out of the top 12 women are American athletes. Six athletes jumped over 46 feet, but only two of the six were USA athletes. Both have been fully dedicated to triple

jump from a young age.

BS — For years the best American track athletes have often been funneled into sprints at young ages. The sport systems in many other countries don't do this. In some successful countries with small populations everyone is a multi-eventer until age 13. Now that coaching education is available to everyone and we've moved away from some of the faulty training philosophies of the past, there are some good American coaches with a passion for the event producing great results.

Are there any games or tricks you play with the athlete to manage competitive stress and anxiety during competition such as promoting consistency on hitting the board, best two jumps total or things like averaging jumps for a competition?

ER — There is no "one size fits all". The coach has to learn what works for each individual athlete. Some athletes compete very well while they are stressed out. Some don't.

IC — As I mentioned earlier, we focus on the positives. Even if it's the worst competition in their life we find a positive element and concentrate on it. This way we work on something that helped for the day but also is beneficial for long-term development. They feel accomplished about the performance and positive about the future.

BS — Subtle pressure to perform in training is the best way I know to get athletes ready for the pressure of performing in the meet. You can have fun in training but work has to get done and focus must be there. Changes must be made, not just talked about. Conversations and coaching aren't the same thing. If they haven't changed you haven't coached. You can't be Chuckles the Clown in training and Vince Lombardi in the meets.

NS — It is important to create a competitive and fun environment in training to alleviate some of the stress that occurs during competition. Helping athletes understand that failures and adversities are learning opportunities rather than negatives and a must for their growth and development. Deep breathing and positive self-talk during competition are also good practices to manage stress and eliminate distractions.

Do you always recommend allowing your athlete to take all their jumps, and if not under what circumstances do you cut back on the number?

IC — Every time we are at a competition, we compete 100% That means we are there to take every jump and every opportunity. If I cut athletes short of the competition it is only for health reasons or injury prevention.

BS — I do; I want them taking chances and going for it, not holding back. I want to encourage seriousness about a competition. To manage load, I would rather skip meets than skip jumps in a meet.

NS — This may vary based on certain factors. The importance of the competition, what we are trying to accomplish on any given situation, the physical and mental state of the athlete, etc.

I usually encourage my athletes to compete until their final jump whenever possible, to learn how to persevere and stay resilient throughout the length of the competition. This could also mimic a championships situation.

However, with the triple jump, being such a taxing event on the body, if the stakes are not high and we are using a meet as a training opportunity, I would then consider cutting back on length of the approach or the number of attempts.

Additionally, if athletes are experiencing discomfort or starting to breakdown technically, to the point where it is becoming counterproductive, then stopping them from doing further damage should be considered.

ER — It depends on the situation and the athlete. The coach needs to learn to be sensitive, observant and aware of many different variables. All of that comes with experience.

There are different methods to measure the lengths of the different phases of the triple jump with percentages (35-30-35%) or ratios (6:5:6). Do you use any of these or are you more based on how things look or sound? And how do you get an accurate measurement?

BS — I just teach technique and really don't chase a particular ratio, but the best jumps in my program seem to result at 35-30-35. I do think that handedness patterns affect this and it's hard for a person who uses the strong leg at the board (as opposed to the coordinated leg) to hit this ratio. They are more hop dominant typically. It bugs me that nobody takes handedness into consideration in

research. If I told a right-handed person they must write with the left, it would look different, right?

NS — I don't usually coach based on these ratios since each athlete will have his/her specific qualities. I instead look at the rhythm of the approach and how the timing of each phase looks and sounds. The objective is to have well balanced phases while conserving speed. Although these ratios are somewhat accurate and ideal for a successful triple jump, high angles and eventual collapses and difficulty to recover from a faulty phase is what needs to be avoided. I look at cause and effect and how to remedy and correct any flaws that may be encountered through different phases of the jump. Avoiding regressive angles and seeking progressive ones would be ideal.

ER — I pay attention to the rhythm of the jump. If it looks and sounds in rhythm, then it's probably OK.

IC — Most research shows three types of distributions. Hop dominated, Jump dominated or equally distributed phases. I am always trying to create rhythm and balanced, equally distributed jump phases. Sadly, it never works this way. So far, I have worked with mostly hop-dominated jumpers.

Have you ever used anything like a jumps decathlon as a preseason conditioner/competition to help with motivation during a fall preparatory season?

NS — I do frequent jumping/throwing/sprint and endurance tests throughout the season, more like a pentathlon but not necessarily a jumping decathlon. The type of testing that is necessary to break the long and monotonous fall training and is a great indicator of progression. I would encourage my athletes to challenge each other and have fun in the process and break into our all-time top ten list in our various internal testing.

THE OBJECTIVE IS TO HAVE WELL BALANCED PHASES WHILE CONSERVING SPEED.

IC — Never used that before. Preparatory season is very taxing and we try to keep it simple as possible. My sessions are very short, but I rely on the consistency of day-after-day build-up.

BS — I have a series of tests I use consistently throughout the phases of training. Jump tests are important but acceleration, power, speed, and weight room tests are important too. At LSU the late November testing pentathlon was a great event, a huge part of fall training evaluation and program culture.

Do you have any recommendations for further study? Websites, YouTube, CD's, etc.?

ER — All of that. There is a wealth of information on the Internet and really no excuse for a coach to be uninformed.

IC — There is a vast non-explored area in terms of research in triple jump. I am currently working on research over hormonal differences between male and female triple jumpers. I strongly believe anyone working with athletes post high school level must consider exploring that type of research or self-education in the area.

BS — There's so much stuff out there, good and bad. I just encourage young coaches to learn the science, and stay based in commonalities…the things all great jumpers do alike. Don't get caught up in quirks or stylistic differences. If you're succeeding, research and study should result in affirmation and small tweaks, not major overhauls. Look at everything, but stay centered. Simplicity is beautiful in its own way, but it's not sexy. Timeless truth never fails, but it's a bad commercial model.

NS — Dan Pfaff and Boo Schexnayder's great material on the subject:

- ALTIS World — YouTube
  John Sheppard, coach from team GB, has great material on training methodology and horizontal jump documentation.
- USTFCCCA Convention Presentations: *Convention Symposium Materials ::: USTFCCCA* Some of them in French, the FFA
- JP personal NBA trainer has good content (broader view on jumping/plyometric exercises and injury prevention)

(11) PJFPerformance — YouTube
- Coaches Insider *Track & X-Country – Coaches Insider*
- Brian Mac *BrianMac Sports Coach*

In addition to many publications that I can get my hands on such as NSA (New Studies in Athletics by World Athletics), Jumps by USATF and various French documentation from the FFA (French Athletic Federation) and French Coaches association and of course *Track Coach* magazine!

RUNNING PERIODIZATION PART 4: HIGH SCHOOL AND COLLEGE PERIODIZATION

BY JASON R. KARP, PHD, MBA

Adapted from the book *Running Periodization: Training Theories to Run Faster,* by Dr. Karp.

"You can't understand the value of a whole process by separating the parts from the process, or the process from the parts."

The high school and college cross-country and track environment presents a unique training problem. Between the emphasis on racing and the desire for immediate results, runners' aerobic development is often sacrificed for the sake of intensity. And that's not ideal if the goal is to become a better distance runner. Runners and coaches need to adequately prepare for many races, sustain motivation and desire, and train with an optimal strategy.

VOLUME

Aerobic training volume is crucial for runners during their developmental high school and college years, if they desire to be good runners. While there is no magical number of miles to run per week to be successful, the best high school and college runners tend to be the ones who run the most, although it can take years to safely reach a higher level of mileage.

Many high school runners who run in college go from a low-mileage high school program to a high-mileage college program, which often leads to injuries. If a high school runner doesn't run a lot in high school, he or she can't just jump into running a lot in college. There must either be a bridge between high school and college training, or better volume preparation in high school to handle the college training. College coaches who train their athletes with high mileage also need to be careful recruiting high school runners who run low mileage in high school, lest they get injured in their freshman year of college from the much greater training load that awaits them. In this case, the runner should spend his or her freshman year of college adjusting to the higher volume, rather than follow the volume,

intensity, and racing schedule of the rest of the team. Aerobic development takes a lot longer than anaerobic development. Although volume has a significant impact on every runner's success, high school runners need to increase their mileage slowly and methodically, matching the training to what they can handle each year.

Injuries like shin splints (medial tibial stress syndrome) and stress fractures are common among high school runners, who are subjecting their bones to a new stress. From their current starting point, whether zero, 20, or 50 miles per week, slowly increase the mileage from the beginning of cross-country season until it's time to back off to taper prior to the most important end-of-season races. Plan the cross-country season as one macrocycle, decreasing the volume during the final mesocycle. After the short transition phase following cross-country season, start increasing the volume again through the macrocycle of indoor track season, and finally again for outdoor track season. If there is no indoor track season, combine the winter and spring seasons into one macrocycle, and increase the volume after the transition phase following cross country until the final mesocycle of outdoor track season. All of this requires a methodical approach, focusing on aerobic training, and sprinkling in just enough speed work to improve speed and elicit performance peaks.

Perhaps the biggest training mistake that runners make is running too fast during their easy runs. High school (and, to a lesser extent, college) runners may be the epitome of this. Between the natural immaturity that accompanies young age and the competitiveness that accompanies the team environment, young runners often like to race each other, even when the run is supposed to be easy. If young runners always push the pace on easy days and do a lot of interval training and races, they can't also do a lot of volume. To accommodate and progress with volume, intensity of easy runs must decrease, at least until the runner gets used to higher volume. College runners who are used to high volume can spend more time getting used to a higher intensity at their already high volume.

PERHAPS THE BIGGEST TRAINING MISTAKE THAT RUNNERS MAKE IS RUNNING TOO FAST DURING THEIR EASY RUNS.

Not only are interval training (or race) days of low volume, the day before and the day after are also typically of low volume because those days often serve as easy, recovery days. Few runners are going to want to sacrifice a race by running a lot the day before. If a high school runner has a track meet on Tuesday and Saturday, that leaves Thursday as the only day of the week to focus on volume. If it's possible to run longer the day after a cross country or track meet, that still leaves only Wednesday, Thursday, and Sunday to focus on low-intensity volume. This is the problem that high school runners (and their coaches) have, with many cross country and track meets scheduled throughout the school year. College runners also encounter this problem, albeit to a lesser degree because of races typically scheduled only on weekends. With all those races on the calendar, how do you train for them all?

The smart thing to do is to not train for them all. If high school and college runners race often, not all those races should be dealt with the same way. Not every race is so important that you must be tapered for it. Train through early-season races, even using those races as workouts to meet the purpose of the mesocycle or microcycle. For example, a cross country 5K race or a 3,000/3,200-meter track race can replace a VO_2max interval workout; a college 8K/10K race can replace an acidosis (lactate) threshold workout; and an 800-meter/1,500-meter/mile race can replace an anaerobic capacity workout.

INTENSITY

In the developmental years, training intensity needs to be carefully controlled, with the major increase in training from year to year coming from volume, sprinkling in just enough intensity at the right times to get the job done and keep the athletes interested and motivated. The more aerobically fit runners are, the more they will ultimately get from their subsequent speed work. At a young age, training should focus on general skill acquisition and general conditioning, which can be used as a springboard to specific skill acquisition and specific conditioning as the athlete physically and psychologically matures. One of the confusing problems is that runners (and their coaches) get results when they run fast workouts. But hammering through more and more interval workouts is not how

to keep getting faster. This is true for a variety of reasons, not the least of which is that anaerobic fitness is limited (you can only increase speed by so much). In contrast, aerobic fitness is virtually unlimited, at least up to the point that genetics will allow for further adaptation.

There are exceptions to the methodical, aerobic-volume approach. For example, if a high school student comes out for the cross-country and track teams because he or she wants to have fun, hang out with friends, or simply to get excused from physical education class, then, by all means, take the short-term approach and don't worry about six months from now. Likewise, if the student-athlete is a senior, with no plans to run in college, then the training should also reflect that circumstance. If, however, a freshman comes out for the team and wants to find out how good he or she can become, then a long-term training approach that focuses on volume and carefully controls intensity is necessary. There are many reasons to run cross country and track; the student-athlete's goals must always be of primary importance.

TRAINING PROGRAM DESIGN

The design of a high school or college runner's training program is easier than that of other training programs because the structure is already provided as four distinct seasons (macrocycles): cross country, indoor track, outdoor track, and summer. (If there's no indoor track season, then outdoor track becomes a larger macrocycle, with perhaps a slightly longer recovery/transition period following cross country season.)

All you have to do is divide those macrocycles into mesocycles, working backwards from the end of each season, and factor in recovery/transition phases following the final race of each season. Each macrocycle begins with a general preparation phase, followed by a specific preparation phase, competition phase, and recovery/transition phase. Repeat this pattern for each season, and you have an annual high school and college training plan. The duration of each phase (general prep, specific prep, competition, and recovery/transition) can be shortened or lengthened to accommodate the competition schedule of each season. Races during the general prep and specific prep phases should be trained through, using those races as workouts, so as not to sacrifice the aerobic training that needs to be done to be able to race fast during the competition phase.

The following training program is for high school and college runners who compete in two or three seasons per year. The annual program is planned in four macrocycles: cross country (14 weeks), indoor track (14 weeks), outdoor track (15 weeks), and summer (9 weeks). The final two weeks of cross country, indoor track, and outdoor track are used to recover from the competition phase and transition into the next season. If your specific seasons are longer or shorter than 14 weeks, adjust the number of weeks in each macrocycle and corresponding mesocycles. For example, if the important races span three weeks instead of four, add a fifth week to the general preparation mesocycle. If you don't have an indoor track season, bridge cross country to outdoor track with another macrocycle that focuses on general and specific preparation and eliminate the competition mesocycle.

YOU CAN'T EXPECT YOUR ATHLETES TO RUN VERY FAST FOR EVERY RACE ALL YEAR OR EVEN ALL SEASON.

The high school/college training program includes three four-week competition phases throughout the year, one at the end of each season. Other than the four-week competition mesocycle, during which you can focus on running fast races, all other races within each macrocycle should be trained through. Run early- and mid-season races as workouts that meet the specified target of that mesocycle. For example, a 5K cross country race in mesocycle 1 can be run as a threshold workout, with the amount of mileage on the day before and day after that you would normally plan if the race were a threshold workout. In other words, don't back off before and after every race of the season, otherwise you'll sacrifice the all-important aerobic development. Remember, you can't expect your athletes to run very fast for every race all year or even all season. But when the training is planned well, they can run fast when it counts at the end of the season.

You can plan the training as concentrated blocks, using a linear periodization approach—general preparation of aerobic training followed in succession by acidosis

Phase 1: Cross Country (14 weeks)				
	Microcycle 1	**Microcycle 2**	**Microcycle 3**	**Microcycle 4 (recovery)**
Mesocycle 1: General Preparation (4 weeks)	90% peak volume 4-5 Easy Runs 1-2 AT Workouts 2 x week: strides	90% peak volume 4 Easy Runs 2 AT Workouts 2 x week: strides	100% peak volume 4 Easy Runs 2 AT Workouts 2 x week: strides	65% peak volume 5 Easy Runs 1 AT Workout 2 x week: strides
Mesocycle 2: Specific Preparation (4 weeks)	90% peak volume 4 Easy Runs 1 Hill Workout 1 VO_2max Workout 2 x week: strides	90% peak volume 4 Easy Runs 1 Hill Workout 1 VO_2max Workout 2 x week: strides	90% peak volume 4 Easy Runs 1 Hill Workout 1 VO_2max Workout 2 x week: strides	60% peak volume 5 Easy Runs 1 VO_2max Workout 2 x week: strides
Mesocycle 3: Competition (4 weeks)	80% peak volume 4 Easy Runs 1 AC Workout 2 x week: strides **Race**	80% peak volume 4 Easy Runs 1 AC Workout 2 x week: strides **Race**	70% peak volume 4 Easy Runs 1 AC workout 2 x week: strides **Race**	50% peak volume 4 Easy Runs 1 AC workout 2 x week: strides **Race**
Mesocycle 4: Recovery/Transition (2 weeks)	Rest	Light jogging; cross-training		
Phase 2: Indoor Track (14 weeks)				
	Microcycle 1	**Microcycle 2**	**Microcycle 3**	**Microcycle 4 (recovery)**
Mesocycle 1: General Preparation (4 weeks)	75% peak volume 4 Easy Runs 2 AT Workouts 2-3 x week: strides	90% peak volume 4 Easy Runs 2 AT Workouts 2-3 x week: strides	100% peak volume 4 Easy Runs 2 AT Workouts 2-3 x week: strides	65% peak volume 5 Easy Runs 1 AT Workout 2-3 x week: strides
Mesocycle 2: Specific Preparation (4 weeks)	90% peak volume 4 Easy Runs 2 VO_2max Workouts 2-3 x week: strides	90% peak volume 4 Easy Runs 2 VO_2max Workouts 2-3 x week: strides	90% peak volume 4 Easy Runs 2 VO_2max Workouts 2-3 x week: strides	60% peak volume 5 Easy Runs 1 VO_2max Workout 2-3 x week: strides
Mesocycle 3: Competition (4 weeks)	80% peak volume 4 Easy Runs 1 AC Workout 2-3 x week: strides **Race**	80% peak volume 4 Easy Runs 1 AC Workout 2-3 x week: strides **Race**	70% peak volume 4 Easy Runs 1 AC workout 2-3 x week: strides **Race**	50% peak volume 4 Easy Runs 1 AC workout 2-3 x week: strides **Race**
Mesocycle 4: Recovery/Transition (2 weeks)	Rest	Light jogging; cross-training		
Phase 3: Outdoor Track (15 weeks)				
	Microcycle 1	**Microcycle 2**	**Microcycle 3**	**Microcycle 4 (recovery)**
Mesocycle 1: General Preparation (4 weeks)	90% peak volume 4 Easy Runs 2 AT Workouts 2 x week: strides	90% peak volume 4 Easy Runs 2 AT Workouts 2 x week: strides	100% peak volume 4 Easy Runs 2 AT Workouts 2 x week: strides	65% peak volume 5 Easy Runs 1 AT Workout 2 x week: strides
Mesocycle 2: Specific Preparation (4 weeks)	90% peak volume 4 Easy Runs 2 VO_2max Workouts 2 x week: strides	90% peak volume 4 Easy Runs 2 VO_2max Workouts 2 x week: strides	90% peak volume 4 Easy Runs 2 VO_2max Workouts 2 x week: strides	60% peak volume 5 Easy Runs 1 VO_2max Workout 2 x week: strides
Mesocycle 3: Competition (4 weeks)	80% peak volume 3-4 Easy Runs 1-2 AC Workouts 2-3 x week: strides **Race**	80% peak volume 3-4 Easy Runs 1-2 AC Workouts 2-3 x week: strides **Race**	70% peak volume 3-4 Easy Runs 1-2 AC workouts 2-3 x week: strides **Race**	50% peak volume 4 Easy Runs 1 AC workout 2-3 x week: strides **Race**
Mesocycle 4: Recovery/Transition (3 weeks)	Rest	Light jogging; cross-training	Light jogging; cross-training	

Phase 4: Summer (9 weeks)					
	Microcycle 1	**Microcycle 2**	**Microcycle 3**	**Microcycle 4**	**Microcycle 5 (recovery)**
Mesocycle 1: General Preparation (5 weeks)	70% peak volume 6 Easy Runs	70% peak volume 6 Easy Runs	70% peak volume 6 Easy Runs	80% peak volume 6 Easy Runs	55% peak volume 6 Easy Runs
Mesocycle 2: General Preparation (4 weeks)	80% peak volume 5-6 Easy Runs 1 Fartlek 2-3 x week: strides	80% peak volume 5-6 Easy Runs 1 Fartlek 2-3 x week: strides	90% peak volume 5-6 Easy Runs 1 Fartlek 2-3 x week: strides	60% peak volume 5-6 Easy Runs 1 Fartlek 2-3 x week: strides	

threshold, VO_2max, and anaerobic capacity. With a short time frame, you want to make sure you cover everything. It's possible, however, especially with races throughout each season, to include a maintenance workout in each mesocycle to maintain the fitness factor you focused on in the previous mesocycle. For example, when you transition from acidosis threshold training in mesocycle 1 to VO_2max training in mesocycle 2, feel free to take out one of the VO_2max workouts and insert a maintenance acidosis threshold workout. Same in mesocycle 3—feel free to take out one of the anaerobic capacity workouts and insert a maintenance VO_2max workout from mesocycle 2. Races themselves may also serve as maintenance workouts.

This program is best used as a template, adjusting the duration of cycles and emphases of mesocycles as needed based on the specific races you're training for and your running strengths. For example, for runners training for 800 meters during indoor and outdoor track seasons, introduce anaerobic capacity (speed endurance) workouts during the specific preparation phase rather than wait until the competition phase. For college runners training for 5,000 or 10,000 meters, place greater emphasis on acidosis threshold and VO_2max during the specific preparation phase. Emphasize the most important fitness factors during the specific preparation and competition phases for the runner and for the target race.

High school and college runners, who are young and can recover quickly from hard workouts, can also take a block periodization training approach by making slight adjustments to this template, doing three to four hard workouts (instead of two) in the first microcycle of each mesocycle (with a drop in volume to accommodate the higher intensity), followed by one hard workout in each of the next three microcycles (with higher volume). Races can substitute for workouts.

Dr. Jason Karp is a coach, exercise physiologist, best selling author of 13 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 2022. In 2021, he became the first American distance running coach to live and coach in Kenya. *Running Periodizatio*n and his other books are available on Amazon.

www.trackandfieldnews.com/tours

2024 Olympic Trials

The 2024 edition will take place once again at Eugene's Hayward Field, the centerpiece of Tracktown USA on the campus of the University of Oregon. This will be the fifth consecutive Trials in Eugene, but only the second at the rebuilt Hayward Field stadium. Dates of the Trials are June 21 – 30. T&FN's tour dates: arrive June 20, depart July 1, 11 nights. Estimate tour price between $5100 and $6400 per person. $1000 deposit now accepted.

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POLE VAULTING WITH DJ'S CHART

BY NOAH KAMINSKY, APEX VAULTING CLUB

Coach David "DJ"Johnston's Six Stride and Corresponding Grip Chart is assessed.

DJ's Six Stride and Corresponding Grip Chart is one of the best tools for coaching the pole vault. The chart indicates how high to grip on the pole, where to run from with that grip and an appropriate bar clearance for someone capable of that grip and step. In other words, it offers a reliable equivalency standard for any vaulter. With DJ's Chart, you can compare an athlete's grip and step to the standard and thus determine where he/she is proficient or deficient in the jump. You can also use the chart to set up beginners on the runway with the confidence that they will land safely on the mats. Coach David F. "DJ" Johnston developed his chart from quantitative observations of eight vaulters, including himself, in the early 1970's when poles were made from steel. Since then, fiberglass poles have allowed for grip and push-off to increase, but the chart's accuracy and application remain steadfast. In this two-part article, I will show you how to use DJ's Chart as both a guide for setup and an assessment tool for push-off.

PART 1 - WHERE TO START YOUR RUN

DJ's Chart shows you where to start on the runway for drills and full jumps. Beginners, intermediate vaulters, and advanced. Everybody. You can use it to set up athletes of any skill level. The chart correlates speed, stride length, and distance from takeoff. I have used it to set up my vaulters and check consistency in their approach—at a meet or in practice. I have even used the chart to coach long jump and triple jump.

Setting up any runway athlete begins with knowing his/her stride length. An athlete's stride length determines where he should start his approach from. Stride length is the distance between each foot strike on the runway. A slower athlete has a shorter stride than a faster athlete. As you might expect, an athlete with a longer stride length needs more runway for the same number of steps as an athlete with a shorter stride length. This is one of the reasons that Usain Bolt ran the fastest ever 100m. Even if Bolt's stride frequency was equal to his peers, at a height of 6 feet 5 inches, each stride moved him slightly

POLE VAULT

THE APPROACH RUN

SIX STRIDE MARK and CORRESPONDING GRIP

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BAR HEIGHT	BAR METRIC +15cm	HAND GRIP	GRIP METER +.09cm	TAKE-OFF MARK		SIX CHECK MARK +.31cm	METRIC	MPS	STEP-LENGTHS FROM-CHECK +.05	
6-6	2.00	8-10	2.75	5'8"	1.73	30-0	9.10		4'0'	1.22
7'0	2.15	9-2	2.84	6-0	1.83	31-0	9.41		4-1	1.25
7'6	2.30	9'6"	2.93	6-4	1.93	32-0	9.72		4-3	1.30
8' 0"	2.45	9'lO"	3.02	6-8	2.03	33'-0	10.03		4-5	1.35
8- 6	2.60	10-2	3.11	7-0	2.135	34-0	10.34			
9-0	2.75	10-6	3.20	7-4	2.24	35-0	10.65		4-7	1.40
9-6	2.90	10-10	3.29	7-8	2.34	36-0	10.96		4-9	1.45
10-0	3.05	11-1	3.38	8-0	2.44	37-0	11.27			
10-6	3.20	11-5	3.47	8-4	2.54	38-0	11.58		4-11	1.50
11-0	3.35	11-8	3.56	8-8	2.64	39-0	11.89		5-1	1.55
11-6	3.50	12-0	3.65	9-0	2.74	40-0	12.20			
12-0	3.65	12-3	3.74	9-4	2.84	41-0	12.51		5-3	1.60
12-6	3.80	12-7	3.83	9-8	2.95	42-0	12.82	MPS		
13-0	3.95	12-10	3.92	10-0	3.05	43-0	13.13	6.9	5-6	1.65
13-6	4.10	13-2	4.01	10-4	3.15	44-0	13.44	7.1	5-7	1.70
14-0	4.25	13-5	4.10	10-8	3.25	45-0	13.75	7.3	5-9	1.75
14-6	4.40	13-9	4.19	11-0	3.35	46-0	14.06	7.5		
15-0	4.55	14-0	4.28	11-4	3.45	47-0	14.37	7.7	5-11	1.80

Figure 1: DJ's Chart. See his website One Approach Run (https://www.oneapproachrun.com/) for pdf downloads and other coaching documents.

farther than his competition due to longer legs. In the jumping events, the runway isn't a fixed or limited distance, and time isn't relevant, so stride length applies differently.

Ideally, the athlete's approach, or the distance from takeoff, should be stride length multiplied by the number of strides taken. In practice, the approach is often slightly longer than this product because the stride length at submaximal speed elongates after the acceleration phase.

Approach distance ~ # steps x stride length

The calculation is a good place to start with new vaulters, especially if you can observe their stride length during the warmup. For example, an athlete with a 5-feet stride length, running from a 10-stride approach should start a little more than 50 feet away from where he takes off. In long or triple jump, this measurement is rather simple. All you need to do is pull the measuring tape 50 feet backwards from the takeoff board. That's really it. Then, observe the athlete's run for consistency and adjust accordingly. If you would like to learn more about adjusting the run, then I suggest reading my article about mid-marks published at Simplifaster.com.

Planting the pole complicates the approach because it adds approximately two more stride lengths to the approach. The distance between takeoff and the back of the plant box (the zero point) varies from one run to another run.

At takeoff, the vaulter should be approximately two stride lengths away from the back of the box. The foot strike location at takeoff varies because the penultimate stride in the approach should elongate and the last stride should shorten. DJ's Chart accounts for this in its 6-stride (3-step or 3L) mark and farther back, but its 2-stride (1-step or 1L) and 4-stride (2-step or 2L) marks are

less reliable. I have found it's better to estimate these distances without reliance on the chart.

DJ designed his chart with collegiate and post-collegiate vaulters. The shortest stride lengths (5 feet 4 inches or shorter) do not correlate well with their respective 6-stride marks. The best advice I can offer for determining a 2-stride mark is adding 4-6 feet to the chart's listed takeoff marks. Then, you should arrive at a decent 2-stride mark. Again, the challenge derives from small variations in foot strike location at takeoff. Some coaches prefer their vaulters to take off "under." Other coaches prefer a more "forward plant" and tall posture at takeoff. Until you know the athlete's 2-stride (1-step or 1L) marks, it's best to estimate their 1-step based on ability. Here are some ranges that work well:

- 9'0" to 10'6" for young athletes, ages 9-11
- 10'0" to 12'0" for beginners, ages 12-15
- 11'0 to 13'0" for older beginners, or athletes with shorter stride length
- 12'6 to 15'0" for intermediate athletes with average stride length
- 15'0"+ for intermediate or advanced athletes with longer stride length

With any beginner at their 2-stride mark, I recommend using a typical grip height of standing grip plus an elbow and a fist. Sometimes, two very different athletes might have the same 2-stride mark, like in the case of a tall beginner who is slow, and a short intermediate vaulter who is quick. The tall athlete likely has a higher grip. Once the athlete is set up, I would observe a couple of attempts and adjust accordingly. If you're confident in the grip and step, and the athlete's swing speed matches his pole speed, then he can move farther back on the runway for more drills or full jumps.

Imagine you have a high school freshman on your team who wants to learn how to pole vault. His 200 meters is 35 seconds. His stride length is 4 feet 6 inches, which means from one left foot strike to the next left foot strike is 9 feet. Any time you want him to move back on the runway for a longer approach, he should move back 9 feet, and go up a grip on the pole. With a little more nuance, I recommend going up 2 grips when he moves back from his 4-stride to 6-stride mark.

For all jumping events, I suggest moving back in 2-stride increments from the athlete's 2-stride mark. All athletes are different and will require you to observe them for minor adjustments until they are running and taking off consistently. As the athlete accelerates down the runway, the stride should naturally elongate. It won't elongate much, but perhaps as much as three inches, maybe six. As he warms up, the same thing happens. These are commonalities you should expect among different athletes. The amount that the stride elongates and his consistency are more specific to the individual. If this is not observed, then it could be that you've given your athlete too much runway and they're slowing down instead of speeding up. DJ's Chart is not wrong. It's acting exactly as it should—a guide for your coaching. You should only back up your athlete on the runway when you're confident that he can accelerate or maintain speed through the takeoff.

Beginners can be tough to work with because they don't have the knowledge or training, as experienced vaulters do. Beginners can't just pick up a pole and get on the runway. DJ's Chart guides you on how to set them up for a successful session. Even advanced vaulters can benefit from going back to basics for a fundamental "drills only" practice, and the chart will, of course, help you set them up. If you use it correctly, DJ's Chart will save a lot of time by avoiding those challenging moments when your athlete can't get their steps right.

PART 2 - HOW TO ASSESS YOUR PUSH-OFF

Push-off measures the difference between bar height and grip on the pole. In other words, push-off tells you how much you can pull your hips up above your grip. The chart doesn't list push-off, but you can calculate it from "Bar Height" and "Hand Grip."

Push-off = Hand Grip – 8 inches – Bar Height

Sample scenarios:

A. If you can grip 8'10" and you clear 6'6", then your push-off is -20".
B. If you can grip 11'9" and you clear 11'6", then your push-off is +5".
C. If you can grip 12'3" and you clear 10'6", then your push-off is -11".

According to the chart, athletes may achieve zero push-off between the grips 11 feet 9 inches or 12-feet. That means if you're fast enough to grip 11 feet 9 inches, then you should be able to clear an 11 feet 1 inch bar. A little higher and your push-off could even become posi-

tive, as shown in Scenario B. With a 12-foot grip or higher, the chart predicts the vaulter has enough speed and technical ability to produce a positive push-off. The chart is not going to be 100% accurate, but it's an excellent baseline for your assessment.

If push-off numbers are greater than what the chart shows, then the vaulter is probably doing a lot of things correctly. Another possibility for a really solid push-off is that the grip could be higher. If a vaulter can clear a high bar with low grip, then it could be that they're very strong but not very fast. Or, they're not converting runway speed into their takeoff efficiently. If push-off numbers are negative with 12-foot grip or higher, then that vaulter needs to work on pulling the hips up more. There may be other factors at play which can explain why they're not jumping above their grip, but it's still worth devoting time to figuring out why.

DJ's Chart indicates that lower grips yield a negative push-off. Vaulters with low grip are usually beginners, and have to grip higher than the bar they're attempting to clear. Most beginners know how to run and jump, but aren't able to pull their hips above their grip. DJ predicts negative push-off for athletes gripping 11 feet 6 inches or lower.

In Figure 2, you can observe that there's nothing unexpected about this. Clearing a bar at or above your grip requires more than just speed and a good jump-up at takeoff. When you introduce pulling the hips up as a skill, then you're challenging the beginner to do something new. Or, perhaps, you're challenging a non-beginner who never learned this skill at all. Runway speed can mask an athlete's strength and/or technical ability so it's worth considering how your push-off compares to the chart.

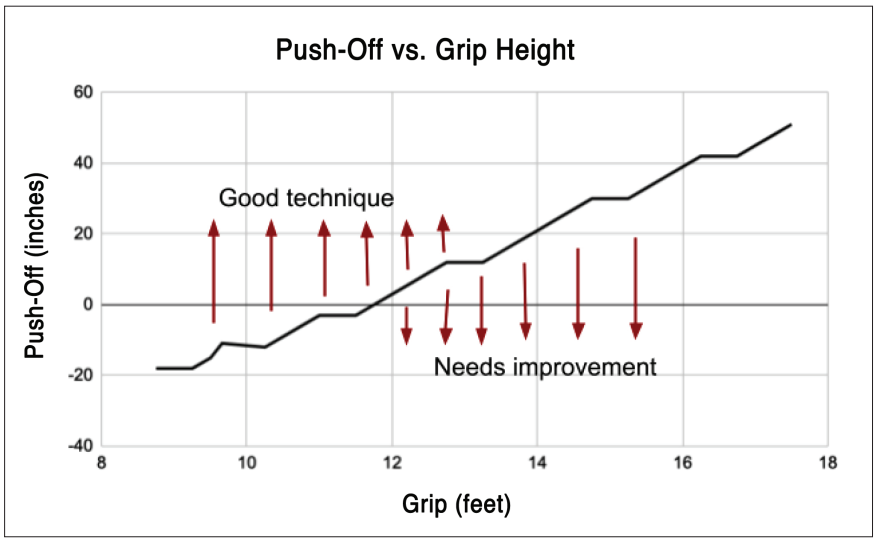

Figure 2. Grip height and push-off data extrapolated from DJ's Chart. The area above the line represents good technique. The area below the line represents poor technique.

Older beginners might clear 10 feet 6 inches with 12-foot grip because they're faster and stronger than the average high school freshman, and that's fine. At age 20, 25 or even 30, athletes enter the sport with a higher baseline of speed and strength, but their progress in push-off will follow the same pathway as anyone else.

If an athlete's grip continues to increase while bar clearance remains the same or increases slightly, then this means the athlete has made minimal technical progress for their push-off. Perhaps they're moving the pole faster because they're running faster, or jumping up more. That doesn't mean improvement in their ability to clear a bar above their grip. A technically proficient jump transfers runway speed into swing speed with a push-off comparable to what the chart reports for their bar clearance.

In Scenario C, the vaulter grips 12 feet 3 inches and clears 10 feet 6 inches, which produces -11 inches push-off. DJ's chart predicts a 12 foot bar clearance with 12 feet 3 inches grip and 5 inches of push-off. The vaulter in Scenario C is most likely fast enough to move the pole well, but push-off technique needs improvement. If another vaulter grips 10 feet 9 inches and clears the same bar from Scenario C, then he is technically better because his push-off is +5 inches. The second vaulter pulls the hips above the grip by at least 5 inches. The first vaulter might grip higher than the second, but the first vaulter's hips never get above his hands. DJ's Chart predicts that they can have better push-off.

At Apex Vaulting Club, we use drills that focus on pulling our hips up above the grip. The muscles must be used in sequence to achieve this. This sequence begins with upper back and lat muscles, then shoulders and triceps, and finally the biceps. We use the Rope Drill, Rollovers, Takeoff Drill, Swing -Up or Swing to Sit, Swing to Chin, Jump The River, and full jumps from a

2- or 3- step to improve athletes' push-off numbers. There's not one drill that works better than another. Each one supports some different aspect of developing the jump.

Nobody can grip up indefinitely. To assume that's possible is simply unproductive and unsafe. I'm not advocating for anyone's grip to go down, and I'm not claiming that it should stay the same, but increasing it until the vaulter can barely move the pole to vertical is a recipe for injury. Grip height should increase gradually over time as athletes get faster and stronger. DJ's Chart shows that push-off should increase with it. Push-off should certainly not decrease or stay the same over time.

CLOSING THOUGHTS

Track the push-off for your vaulters. Track their starting marks and their mid-marks. Collect the data at every meet and every practice. You can even keep a push-off record board for the top three male and female vaulters on your team. This is just one of many ways to incentivize skill development.

In such a highly technical event, DJ's Chart makes coaching the pole vault easier because it pulls the guesswork out of setup. Like many field events, pole vault is sequential. Each component of the jump builds on the previous component. A good pole carry sets up a good run, which sets up a smooth plant and a powerful takeoff. If the vaulter executes one component in this sequence poorly, then it has a cascading effect on the subsequent components. DJ's Chart may not instruct how to carry the pole, but it offers excellent guidance for where to start on the runway.

I learned how to use DJ's Chart for coaching the pole vault, but Coach Johston has charts available for the long jump and triple jump on his website, One Approach Run. Each chart widely applies to athletes of all fitness levels and training ages. I recommend learning how it works and using it whenever applicable. Thank you, DJ!

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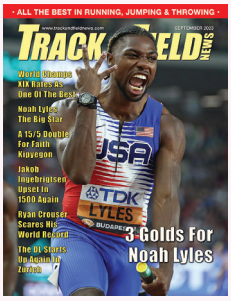

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FALLING DOWN

BY RUSS EBBETS

Track Coach editor Russ Ebbets discussion the ordinary and extraordinary stresses that affect all athletes and how to deal with them.

When Floyd Patterson fought Ingemar Johansson the first time he got knocked down 7x in the third round before the referee stopped the fight. Patterson was "out on his feet" and some of Johansson's blows were gruesome. When they asked Patterson why he did not "stay down" and save himself he replied that he was amazed at how Johansson kept getting back up, he thought, in his deluded state, that he was clobbering Johansson. Persistence, willfulness or simple stubbornness are all necessary, to a degree, to succeed. But we all have our limits. In the two re-matches Patterson KO'ed Johansson twice and proved to be the only man Johansson lost to in his pro career.

Six or seven years ago I spent a weekend hiking the Appalachian Trail in Vermont. I camped that night at a lean-to that had a number of SOBO or southbound thru-hikers with about 500 miles under their belt. Nightly campfire discussions on the AT are usually informative and can run the gamut from trail conditions to water to food to bugs. This particular night the subject was falling down.

AT hikers, to me, are experts in hiking. They carry their world on their backs and have reduced life to the bare essentials that they can carry. Most have learned to focus their attention on what matters, what keeps them safe and what they need to hike on. It is a perspective stripped of adornments or the need to impress but seemingly filled with satisfaction, friendship, cooperation and perseverance. Life on the AT is a world within the world.

To my surprise everyone at the campsite had fallen down that day. In fact, all noted that they usually fell at least one time each day. I was amazed. The reason falling down is an issue is that this is how most hikers get hurt and when you are five miles from nowhere any hurt can make a long day, a very long day. The general sentiment was, "You fall down, you get up." Maybe that is too simplistic, even unrealistic but it is the reality all lived with as they took the next step.

When I was teaching, I taught a course on anxiety and depression. Actually, it was a segment on anxiety and depression that was a lead-in to a capstone technique course. For many it was not well received.

A significant number of third-year interns had already achieved the "expert" stage by this point in their education. This was not in reality but in their own inflated estimation. The common gripe was what did this veer into two psychological qualities have to do with a technique course? Having

all the knowledge in the world and essentially no real-world experience explained the resistance, they didn't know what they didn't know.

Patient compliance is the biggest problem in healthcare. Anxiety and depression reduce compliance. I figured it was a good idea learning how to recognize situations that lessen treatment efficacy. What did I know?

Anxiety and depression are about a distorted time orientation. If one were to chart mental health on a timeline, depression would be the past, anxiety the future and a healthy state would be "here and now." Depression is an obsessive dwelling in the past while anxiety is a sustained fear of the future. From time to time, we all spend some time in these states of mind. All this becomes a problem when "some time" becomes a constant state of mind, an invasive and pervasive crippling thought pattern that re-directs one's actions in non-productive ways.

Fatigue plays a major role in both these states. I'm using fatigue in a general sense. Actually, one has moved past the simple day-to-day fatigue we all face at the end of a busy day or a well-planned training schedule to a state of overtraining—or worse a chronic fatigue state. The pictograph displays the devolution of one's efforts that lead to chronic fatigue. (Figure 1)

Why does this happen? At a basic level there is an imbalance in the mind-body-spirit trichotomy (Figure 2). The mind (one's wants and desires) has disregarded the *sense* of the body and continually drives on, disregarding the requisite rest and regeneration necessary to keep things on an even keel. Hope can be lost, lament and frustration arrive. Some give up, others redouble efforts but in either case the results are unsatisfactory. The tendency to keep digging just makes the hole deeper and deeper.

The cause of all this is stress, too much accumulated stress that the body cannot accommodate. For most people stress has only negative connotations. You hate your job, you married the wrong person, your kids are out-of-control or there's a pandemic. But stress and stressors can also be generated from seemingly positive life events. Consider for a moment plans for a wedding, moving to a new city for a better job, the birth of a child, a new puppy or winning the lottery can create enough change (i.e. – stress) to disrupt the order of one's life and result in excessive fatigue, anxiety, doubts and fears. Making an Olympic team (achieving a life-long goal for some, or a life-changing goal for others) also can create changes and pressures that some handle and others don't. While making the Olympic team in the 2-person kayak would be a great personal achievement it is probably not an event discipline that is going to land your picture on a cereal box, have you pitching national brands on TV or generate your own sneaker line.

The pressures of athletic stardom and celebrity were brought into focus with Simone Biles' Olympic meltdown. It is difficult for the average television viewer to imagine the pressures she faced leading up to the Games. At 24 she is almost in uncharted waters in terms of a gymnast of her "advanced" age participating. Certainly, there have been older gymnasts, but they have never been the "star" of the Olympics. No longer was Biles the wide-eyed 15-year-old on her first Olympic team, realizing a childhood dream where everything was exciting and wonderful.

Biles had graduated to the "grand old lady" status with endorsement

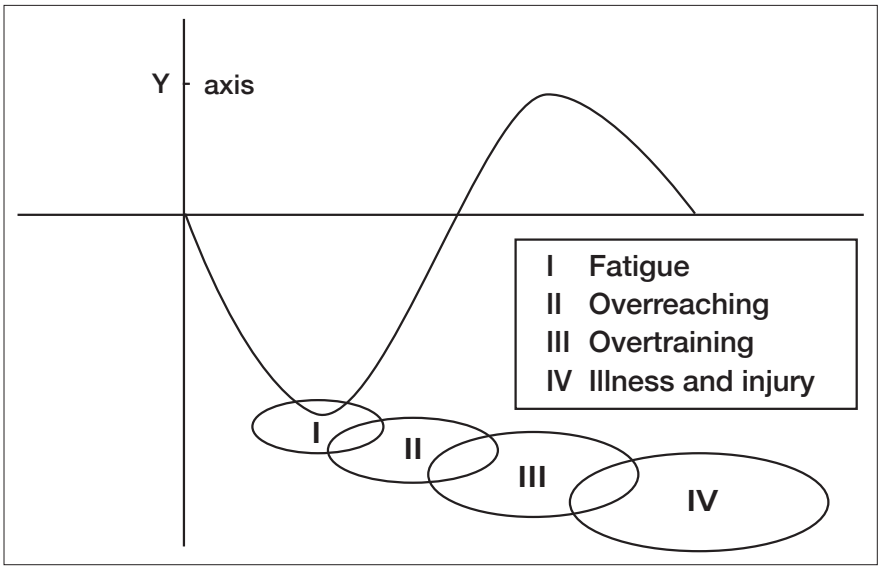

Figure 1: Fatigue Syndromes — note how the downward progression results in a greater and greater amount of time as the problem becomes more severe.

Figure 2. Mind-Body-Spirit Trichotomy — ideally there should be a balance :ith these three qualities.

deals, photo ops and enough social media presence that her every move could be captured, chronicled and scrutinized. Expectations were not just high, they were off the charts, after all we are talking about the G.O.A.T. (greatest of all time). The pressures of her chosen lifestyle were overwhelming. She could not step back and rest and recover. This constant drain upset her internal sense of balance, literally and the "twisties" were added to the wider lexicon of sport.

The Social Readjustment Rating Scale has been used for years to chart the amount of stress one can manage healthfully. When one accumulates 300 points in a year the drama of those changes is so great that the majority of humans have trouble coping with all the new pressures and begin to exhibit aberrant coping behaviors such as impatience, anger, substance abuse, loss of focus, withdrawal, anxiety or depression that can degrade one's quality of life. In a short period of time the odds are high that one will experience a personal breakdown. Scoring 150-300 points rates a 50% chance of suffering a health crisis and less than 150 points is generally accommodated with day-to-day coping mechanisms. (Figure 3)

Therapy, medication and personal changes may be necessary to weather the storm while one adapts to the new normal, whatever that may be. Another idea to keep the ship on an even keel is to dedicate two hours a week for you. Just you. Take two hours of unstructured time to do something for you – and not feel guilty about doing it.

I once read somewhere that 70% of Americans will experience some type of life changing setback in any given 10-year period. If true, that is a troubling statistic. On the other hand, you and I are not alone in all this. If you think for a moment about your network of family and friends, neighbors, religious institutions, civic groups and communities and even the support of social media (GoFundMe) all can offer a safety net that can soften the blow of turbulent times and help right the ship.

It is an unrealistic expectation that life is simply a smooth transition from one day to the next. It doesn't work that way with training, on the AT or any other reality. Life is a journey with peaks and valleys, good times and bad. With help, perseverance and self-reliance one can weather the tough times, learn from the stumbles and relish the good times. Ultimately, we all need to accept the fact that the most important lesson from the "fall downs" is to get back up.

P.S. – If you have Netflix there is a fascinating documentary *Untold Stories: Breaking Point* that details the struggles of Mardy Fish, a world class tennis player. Of note is his rapid ascent when he lost some 30 pounds over the course of a year through "dedicated training." To me it is a classic example of chronic overtraining (the will driving the body to exhaustion that led to his subsequent anxiety disorder). His newfound drive temporarily gave him some success but created a situation that became unsustainable.

Rank	Life Event	Point Value
1	Death of a spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
5	Death in family	63
6	Personal illness/injury	53
7	Marriage	50
8	Fired at work	47
10	Retirement	45
14	New family member	39
16	Change in financial state	38
25	Outstanding personal achievement	28
32	Change in residence	20
34	Change in recreation	19
41	Vacation	13
42	Holidays	12

Figure 3: Social Readjustment Rating Scale — partial listing of "Life Events" — point values are added for a given year — adapted from Holmes and Rahe.

DON'T FOUL!
LONG AND TRIPLE JUMP RUN-UPS

BY JOHN SHEPHERD

British coach John Shepherd explains how to nail a horizontal jumps run-up.
Excerpted from the June 6, 2019 issue of *Athletics Weekly.*

Some of the biggest long and triple jumps in the world don't count and world records would undoubtedly have been broken multiple times had it not been for the pesky plasticine and the need to hit the 20cm take off board without fouling. Achieving a great jump from great run-up sprinting is a skill and it needs specific practice. It's no good just training like a sprinter if you want to be a long jumper or triple jumper.

There is a difference between sprinting the 100m and sprinting in the long jump run-up (and it's not just the distance!). Although both the 100m sprint and the long and triple jump run-up have similar phases in terms of speed distribution—that's to say, acceleration, alignment (coming up into upright running) and a maximum velocity phase (attack to the board for the long and triple)—there are fundamental differences in what's required between the horizontal jumper and the 100m sprinter.

The long and triple jump run-up for the mature, established jumper will be around 30-45m in length and the number of steps taken to the board could be anywhere between 16-22 plus. The number of steps will be dependent on how long it takes the jumper to reach top (or optimum) speed to takeoff in a way that will produce maximum distance and it could also depend on whether the jumper uses a standing start or a rolling start.

For younger athletes, length of run-up will invariably be shorter. Up to about 14 years of age, the number of run-up strides will be around the age of the athlete, plus or minus a couple of strides (more likely to be plus)—that's to say a 12-year-old would run 12-14 strides for his long/ triple jump approach.

One of the keys to creating an optimal run-up for the long and triple jumper regardless of age is the need to attain optimal/ maximal speed into the takeoff, so the last 5m or so to takeoff.

Senior and elite athletes often have their speeds recorded 10m out from the board and then at other distances into the board, for example, 5m out, at the point of takeoff, and just after (to determine the loss of speed that will inevitably occur when the jumper crosses the

board) when biomechanical analysis is being made. Working to minimize loss of speed into the board and at the point of takeoff is therefore fundamental whatever the age and level of ability of the jumper.

MOVEMENTS INTO TAKEOFF

The movements over the last three steps are fundamental to the long and triple jump. If the jumper fails to set up an appropriate rhythm and technical application then jump distance will be compromised.

In short, the jumper cannot "just sprint" through the board—he needs to perform some deliberate movements to set himself up for the jump. In the long jump the penultimate step is usually recommended to be made from a flat foot.

The jumper lightly drops the heel onto the ground as he moves into takeoff. This should be a subtle movement and the hips should only drop minimally (a couple of centimeters). The flat-foot penultimate step will allow the jumper's hips to travel more distinctly forward through the takeoff and enable them to exert more pressure on the board (vertically and horizontally which will enable greater height and distance to be obtained).

Note, the jumper should achieve height "naturally" and through the correct technical execution of the takeoff strides and takeoff and they should not attempt to jump high. If he does this then in all likelihood he will slow his takeoff and spend too much time on the board with the result being compromised jump distance.

The triple jumper doesn't need to gain vertical height off the hop takeoff in the way that the long jumper does and therefore he needs to run through the board with even less specific preparation. The angle of takeoff is lower compared to the long jump and therefore "flatter". They need to maximize speed through two subsequent landings (the step and the jump) and need to carry speed through the takeoff to use in the two further stages of the jump.

Both the long and the triple jumper will also need to move their limbs differently as they come into takeoff compared to the sprinter. This reference is being made to the movement of the free leg and arms on the takeoff stride and the preparation (including the penultimate step for the long jump) for the two-three strides preceding takeoff.

The triple jumper's choice of takeoff arm action, which could be double, single or quarter actions are a further necessary adjustment that need to be made over the final run-up strides.

MORE THOUGHTS ON BOARD ACCURACY

Researchers in the *Journal of Sports Science*, when studying young long jumpers, found that jumping from run-ups at the pit perhaps not surprisingly had the greatest relevance to the event compared to run-ups on a sprint track and run-ups on a sprint track with a takeoff.

They wrote: "The task of run-through followed by takeoff on the track lane failed to initiate visual perception, step regulation and technical efficiency at the steps preceding the instant of takeoff... Practicing long jump run-up accuracy at a setting not containing the informational elements of the performance environment fails to develop the key elements of the skill."

So, it would appear that fundamental to training long and triple jumpers is the requirement to do repeated full run-up, takeoff and jump work at the pit.

This requirement is a further source of divergence for the long and triple jumper compared to the sprinter. Yes, you need speed to jump far, but this speed requires spatial awareness and the ability to "adjust" to hit the takeoff. Doing lots of sprinting away from the run-up, although it will develop speed and improve technique, needs to be kept in check and specific run-up work has to be done over and over again to develop that very fundamental skill for the event/events.

Further research has looked into the use of visual guidance on the run-up—basically the extent to which the jumper "looks" for the board and adjusts his strides subtly to make a valid jump. Researchers in sports biomechanics showed that when jumping from a full run-up, mature athletes employed 50% more visual regulation compared to when they just did run-throughs.
So, again a common theme is appearing—regular jump work from full run-ups will improve sighting and hitting the board. Researchers did add this suggestion: "Our results should compel long jump coaches to supplement run-through training with additional visual guidance exercises, to encourage their athletes

(Continued on page 7855)

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- Skills and knowledge to coach athletes at the national, international, and podium level
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Learn more and apply at: https://www.usatf.org/programs/coaches/level-3-information

2023 EMERGING FEMALE COACHING GRANTS STILL AVAILABLE. APPLY NOW FOR USE AT USATF LEVEL 1 OR LEVEL 3.

The Emerging Female Grant is provided by USATF and provides a select number of minority, women track and field coaches the opportunity to attend USATF Coaching Education Schools and USATF specialty courses. Grants are valued at the respective course tuition or registration fee.

Interested applicants must be a minority, female coach, USATF 3-Step Safe Sport Compliant, provide a resume of coaching background/experience, and position statement via an online application.

Applications for Emerging Female Grants are accepted on a rolling basis until funds are expended. Applications are reviewed on the first (business) day of each month must be received a minimum of 30 days prior to the start date of the requested program/school. Grant recipients will be notified via email.

Apply at: https://www.usatf.org/programs/coaches/grants/emerging-female-coaching-grant

TEAM USATF TOPS MEDAL TABLE AND DOMINATES TEAM SCORING AS WORLD ATHLETICS CHAMPIONSHIPS CONCLUDE

A men's relay gold and a bronze in the women's 800 wrapped up another dominant Team USATF performance on the ninth and final day of the 18th World Athletics Championships at the National Athletics Center. The U.S. finished with 29 total medals, 12 of them gold, earning 17 more than any other nation. For the second straight Championships the World Team Champions trophy also went to Team USATF with 277 points, almost double the next highest nation. It was the 10th time in a row for the U.S. to have the highest team score.

TEAM USATF MEDAL TOTAL (29)
GOLD (12)
Ryan Crouser, men's shot put (23.51/77-1.75, championships record)
Mixed 4x400, Justin Robinson, Rosey Effiong, Matthew Boling, Alexis Holmes (3:08.80, world record)
Noah Lyles, men's 100 (9.83, =world lead)
Grant Holloway, men's 110H (12.96)
Sha'Carri Richardson, women's 100 (10.65, championships record)
Laulauga Tausaga-Collins, women's discus (69.49/228-0)
Katie Moon, women's pole vault (4.90/16-0.75 - shared gold)
Noah Lyles, men's 200 (19.52)

Chase Ealey, women's shot put (20.43/67-0.5)
Men's 4x100, Christian Coleman, Fred Kerley, Brandon Carnes, Noah Lyles (37.38, world lead)
Women's 4x100, Tamari Davis, Twanisha Terry, Gabby Thomas, Sha'Carri Richardson (41.03, championships record)
Men's 4x400, Quincy Hall, Vernon Norwood, Justin Robinson, Rai Benjamin (2:57.31, world lead)

SILVER (8)
Anna Hall, women's heptathlon (6,720 points)
Tara Davis-Woodhall, women's long jump (6.91/22-8)
Valarie Allman, women's discus (69.23/227-1)
JuVaughn Harrison, men's high jump (2.36/7-8.75)
Janee' Kassanavoid, women's hammer (76.36/250-6)
Shamier Little, women's 400H (52.80)
Gabby Thomas, women's 200 (21.81)
Erriyon Knighton, men's 200 (19.75)

BRONZE (9)
Joe Kovacs, men's shot put (22.12/72-7)
Daniel Roberts, men's 110H (13.09)
Rai Benjamin, men's 400H (47.56)
Keni Harrison, women's 100H (12.46)
DeAnna Price, women's hammer (75.41/247-5)
Quincy Hall, men's 400 (44.37)
Sha'Carri Richrdson, women's 200 (21.92)
Chris Nilsen, men's pole vault (5.95/19-6.25)
Athing Mu, women's 800 (1:56.61)

Read the full final day recap and results at:

https://www.usatf.org/news/2023/team-usatf-tops-medal-table-and-dominates-team-sco

DON'T FOUL! LONG AND TRIPLE JUMP RUN-UPS

Continued from page 7851

exercises, to encourage their athletes to visually regulate more of their long jump approach."

So what are these visual guidance exercises? Coaches have variously used run-ups longer than the athlete's normal length, so that they need to find a new rhythm and patterning of strides to target and hit the board. Performing run-ups from "random" starting points is another method and one I have used. These should be just under or over the jumper's normal run-up length. Using different starting methods to hit the board and takeoff/jump—thus jog on starts, or making the first step with the foot not usually used are further options.

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