



TRACK COACH

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LEGENDS

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TRACK COACH

Winter 2020 – 230



The official technical
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USA Track & Field

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TRACK COACH

FORMERLY TRACK TECHNIQUE

230 — WINTER 2020



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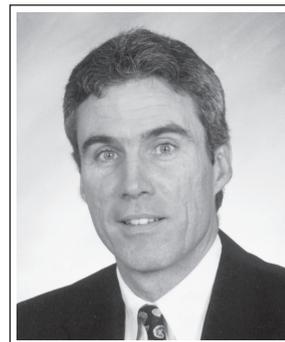
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FROM THE EDITOR

RUSS EBBETS



TECHNIQUE V. STYLE

Track and field is a technique-based sport. Even the casual spectator can watch most any athlete move and identify the meaning. Shot put, high jump, pole vault or hurdles—it is difficult to confuse what's going on.

One of the goals of coaching is to achieve a "technical model." In reality a technical model can be a simple concept. Generally speaking, there is a "right way or wrong way" to do things. Where it gets fuzzy is with the varying schools of thought, gurus and programs that may champion technical nuances that identify "their brand" of shot putting, pole vaulting or whatever. But once again the similarities and common denominators of the "technical model" greatly overshadow these technical nuances.

Why the variation? Now things graduate from the simple to the complex. One reality that dictates technical execution is simply the fitness level of the athlete. The appropriate use of levers, posture, line of drive and force application are different from one athlete to the next due to age, maturity, size, gender and experience. These differences may be dramatic and require the coach to tweak the model from athlete to athlete. Coaching becomes a struggle between what should be done and what can be done.

Coaching is not a Procrustean Bed. Procrustes, you'll remember, was the Greek god who wanted all his captives to be the same size so he chained his victims to an iron bed and either stretched or chopped down any variants to get what he wanted. Procrustes may have been the original "one size fits all" guy before infomercials but modern day coaching necessitates we program in some wiggle room.

Any coach worth his or her salt knows that one of the great challenges of the profession is to figure out what exactly is the right amount of "wiggle room." The technical skills of a workout need to be adjusted to the age and ability of the athlete. Trying to teach a double hitchkick flight and landing pattern to a kid long jumping 12 feet is just not going to work.

And let's not forget physiology's effect on technique. Running may seem fairly cut and dried; you teach the whole action and as fitness improves things progress from a lap to a mile to a marathon. But even running has some different techniques.

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EDITORIAL COLUMN

Continued from page 7322

The marathoner's foot basically "cuts the calf" from one step to the next with an easy arm action that never quite approaches the chin or the hips. Contrast that with the sprinter who steps over the knee and uses a vigorous arm action that cycles from the "lips to hips." Trying to crossover the different step patterns for the different distances is not going to work.

And as far as the hands go, you can wrap your thumb tip with your index finger or use that straight fingered open hand form popularized by Carl Lewis, because he had "style."

But what about personal style and when is personal style a bad thing? Well, is the technique appropriate for the training age of the athlete? Does the athlete have the necessary fitness, physical strength and maturity to execute the technique? If the answer to any of these questions is "no" repeated attempts will only lead

to frustration for all involved.

Another important question—is the technique biomechanically sound and safe? I once had a pole vault recruit who gripped the pole in a right handed manner and took off on the left side of the pole. He cleared the bar with what was essentially a feet first Fosbury Flop. His vault height was limited by his handhold. I told him we'd change him over when he got to school. He told me "no," that "This is my style." And that is how his career ended, a victim of his own style.

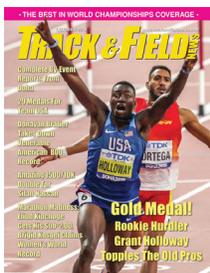
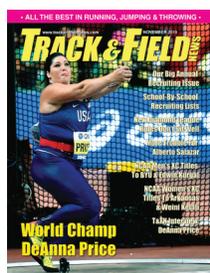
Training theorist Tudor Bompa once described style as an athlete's use of imagination to solve a technical problem. He also called style an athlete's rebellion against authority. While I have no doubt this defines some athletes, I have reservations making a universal application. One needs to remember that Bompa was a product of the Communist Eastern European tradition where conformity was the Procrustean Bed of the culture. In fact, you might have heard of that famous communist-era maxim roughly

translated, "My way or the Siberian Railroad."

While I have always found Bompa's statements intriguing if you look at them from the athlete's perspective—should not the coach have enough sense of self to recognize and capitalize on athletic genius? That the imaginative kinesthetic sense the gifted athlete possesses might in fact be a "better way?" Where would the high jump be today if Bernie Wagner had not given Dick Fosbury the green light?

So while a standard technical model might be just what the newbie or novice needs to get safely started in the sport some creative presentation may be the ticket for the expert that brings that athlete to a breakthrough. I mean, what was Einstein talking about, if not this, when he defined insanity as doing the same thing over and over and expecting a different result? Improvement necessitates change and tweaking the old technical model may be the change needed for the athlete to reach the next level, Procrustes be damned.

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COACHING LESSONS FROM 40 PLUS YEARS OF COACHING TRACK AND FIELD/CROSS COUNTRY

Some practical advice and “words of wisdom” from a coach who has coached for over 40 years and has coached track & field/cross country at every level from middle school to open, elite athletes. Thorson, who retired in 2017 as the director of track and field/cross country at the University of Mary in Bismarck, ND, is an NAIA Hall of Fame coach and a four-time national coach of the year. He guided the Marauders to 46 conference championships and has coached 403 collegiate All Americans in 29 years of college coaching.

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

INTRODUCTION/OVERVIEW

Our objective here is to offer some insights in to the world of coaching in a number of different areas, including (1) Relationships (2) Balance (3) Athletes (4) Culture (5) Preparation (6) Goals (7) Assistant Coaches (8) Motivation (9) Discipline/Rules (10) Defeat (11) Shortcuts. First, a few general thoughts:

1. You are never done learning as a coach. Read, attend clinics, do on-line clinics and make use of mentors and other coaches, including your own staff.
 2. Understand that improving as a coach is an ongoing work in progress. It **never** ends. Many coaches don't understand this. Understand that you can always learn more and improve. Don't always think that “you are the smartest guy in the room.”
 3. I am a better coach now after retiring two years ago because I am still learning. I now have time to write, do research and analyze my coaching and training.
 4. You have to continue to learn
 5. Coaches must embrace change. There is no progress without change and change can be very difficult for most people.
 6. Control what you can control. Understand that some things are out of your control and figure out another way.
 7. Don't allow negativity to “suck
- because teachers are constantly updating, improving and changing their methods and teaching. **Great coaches are great teachers!** The reality is coaching is teaching.

the life out of you.” Look for positives and retain your passion. I was fortunate to retire and still have the passion, to still have that burning passion to coach after 40 years of doing it!

RELATIONSHIPS

1. Coaching is about people, managing people and relationships. Relationships are the core of athletics and coaching. At the end of day, it is about **PEOPLE!**
2. Coaches don't need to be liked by athletes (although it helps). But they need to be respected. And that respect must be earned.
3. One of the best ways to earn that respect is to **CARE**. Care for the athlete in the sport and in life.
4. **Show** athletes you care. Be sensitive to today's athletes. They are not worse than in past years as many people say. They are different. They have grown up in a totally different world than most of the people who are coaching them. That is the reality and we must recognize it.
5. Treat athletes like they are your own children, like they are a part of your family. You will treat them much differently. I know that after having coached one of our daughters at the University of Mary.
6. You are a **role model** whether you want to be or not. Accept that.
7. Show athletes that you are **totally committed** to their best

welfare and your program. Athletes see through the phonies and the fakes very, very quickly.

8. The best coaches will be the ones who can communicate and relate best to their athletes. Myron Schulz, former U Mary football coach and Hall of Famer, was an assistant track & field coach in our program who coached national champions despite a lack of technical knowledge in the sport. How? He could relate. He could communicate. And he could motivate athletes. Athletes loved him! They performed above and beyond for him!
9. A part of relationships that many coaches fail to consider is their interaction with the community. Relating to and being a strong part of the community assists in building strong community support for the coach and his/her programs.

BALANCE

1. Don't let your coaching define you and encompass your identity. One of my former assistant coaches always said that “coaches allow their success to be a reflection of who they are, and that isn't right.” Find a balance with family, religion and your social life. Take time for your own physical and mental health. **You will be a better coach for it.**
2. Many coaches take themselves way too seriously. Don't get me wrong. What we do is vitally, vitally important. We are shaping and molding the lives of young people! But many coaches, including me, took

winning conference and national championships as the end all. And it isn't. It is important to put into perspective what we do.

3. I had several occasions where it was very clearly put into perspective and I learned what was really important in life! One was when a pole vaulter in our program was hurt in a gymnastic accident and I sat with his mother when the physician told us her son would likely never walk again, but would hopefully regain some control in his hands and arms. Another was when a senior sprinter who was a student coach for us committed suicide. I had to call his parents from where I was recruiting in Washington and try to explain what we knew about the situation. It may have been the toughest telephone call I have ever made. Winning didn't seem so important in those two particular occasions. Things were definitely put into perspective.
 4. One of the greatest satisfactions and rewards in coaching is seeing your athletes reach new levels of excellence in athletics, and more importantly, in life. A **balance** in life will allow you to enjoy the rewards and thrills with your athletes and family. It was truly delightful at my retirement dinner two years ago to have many former athletes come up and thank me for making a difference in their lives. Not one talked about the All-American awards they won. They were all so grateful and appreciative of how the University of Mary and our program had shaped and molded them into the people they had become. I was reminded of the famous John
-

Wooden (UCLA) quote: “A good coach can change a game. A great coach can change a life.” Oh so true!

ATHLETES

1. Locate athletes who have a burning passion to excel and will do whatever it takes to achieve success. We have had many, many standout performers. Three that stand out that would do whatever it took and had an unbelievable passion to excel:

1. Jamey Mulske (8-time national champion, 21-time All-American, 2-time National Meet Outstanding Performer award). Jamey sprained her ankle in the triple jump in 1998 at the national championships in Tulsa and then limped over to the starting line and won her eighth and final national championship in the 400-meter hurdles!
2. Mandy Schroeder (4-time National Champion, 11-time All-American). Mandy won two of her 11 All-American awards at the national championships in 1999 in West Palm Beach FL with a broken foot. Not a stress fracture. A broken foot.
3. Joe Koch (6-time All-American, 11-time conference champion). We went out over Christmas break one year and shoveled one lane on our outdoor track and Joe ran 200-meter repeats with spikes in 10 degree below weather.

Obviously, all three athletes

had serious, serious passion to excel. Those are the kind of athletes you want in your program.

2. Find athletes who want to invest and have an ownership in your program.
3. Find athletes who want to be motivated and have an edge, athletes who have an ego. The great athletes all have them. All of the truly great athletes want to compete on a “big stage.”
4. Find athletes with character. “You can’t coach character” is a quote you see often and it is true.
5. Recruiting: It is hard work that needs to be done on a very consistent basis, whether you are a college recruiter searching worldwide or a high school coach looking for athletes in the hallways.
6. You have to be a salesman and sell your program, your vision, and yourself. Be honest and positive. There is zero value in negative recruiting.

CULTURE

1. The culture that you want to build is structured through core values and a core group of athletes who believe in your vision, your philosophy and your program’s values.
2. One of the best methods to build a culture is the principle of **conformity**—people conform to a group and have an inherent need to fit in. They will follow the crowd, so to speak. They will fall in line. We as coaches have to assure that the athletes

” fall in line” with the correct core group that believe in the culture you are trying to build.

3. You need great leaders to assist in building your culture. You can’t do it by yourself. Great teams have great leaders! And not all leaders are born, as some people suggest. They can be developed. And that is one of the tasks of a coach who is attempting to put his or her own culture in place.

PREPARATION

1. **The key to success is planning and preparation.** You have to have a plan for success. We termed our plan the **U Mary process**—a plan that developed and evolved over the years. **Faith** and **trust** in the process was essential for the athlete to be successful. One of the best examples was our distance coach, Dennis Newell, always having his athletes ready to perform at their highest level in the championship events. Certainly some of it was his training. But a bigger part may have been mental. Coach Newell’s athletes firmly believed and trusted his process! They competed well in the “big” meets because they believed they would.
2. Understand that the process does not happen overnight. Good things will happen, but it will take time and patience. We live in a world where most people today want immediate results and success. It is the job of the coach to instill in athletes the need for patience.
3. **Talent doesn’t typically win anything. Preparation does!**

GOALS

1. Goals are essential to success for both the athlete and the coach.
2. My personal goal was to work diligently with every ounce of strength I had toward excellence. **“Excellence doesn’t just happen”** was the very first slogan we put on a team t-shirt 26 years ago and it is still very, very true today!
3. **Perseverance** and **consistency** are a must. My thought process was to work each and every day to build a culture of excellence!
4. My personal goal as a coach was to get better each and every day. I wanted to do at least one thing daily to enhance my own coaching or program. Sometimes that meant working on vacations. Sometimes it meant doing just a little bit extra at the end of a long, tiring day. Every day means **every** day.
5. We always stressed to our athletes that most limits are self-imposed. There is nothing wrong with dreaming and shooting for the moon. That is a good thing. But short-term and intermediate goals are more important if you are to realize your long-term goal (s). *You must have a plan if you are to realize your goals* was our message to athletes.
6. Expectations and goals go hand and hand. People will rise to their level of expectation. Don’t be afraid to have very high expectations. Yes, you as a coach will be disappointed at times. But

more often than not, athletes and people in general will rise to your level of expectation.

ASSISTANT COACHES

1. The goal is provide a setting where assistant coaches feel comfortable and in control of their role. The best assistant coaches have a great work ethic, are dedicated, loyal, possess great communication skills, excellent relationship abilities, and most of all, have a true **passion** for the sport.

UNDERSTAND THAT THE PROCESS DOES NOT HAPPEN OVERNIGHT. GOOD THINGS WILL HAPPEN, BUT IT WILL TAKE TIME AND PATIENCE.

2. Good assistant coaches have **initiative**. They “take the ball and run with it.” They don’t have to be told to do every little task. They see something that needs to be done and they do it! My last graduate assistant, Amelia Maher, had projects finished and on my desk in the morning before I even thought about them. Those kind of assistant coaches are invaluable.
3. Good assistant coaches have a **growth mindset. They like to try new things and believe challenges help them grow.**
4. The head coach must delegate duties. But don’t delegate the farm away. Don’t delegate out of laziness. We gave our assistant coaches a job and we

expected it to be completed with the results we were seeking. Coaching is a “results business.”

5. Emphasize that it is okay to make a mistake. Just don’t make it twice.
6. Demand **loyalty**. That is a must.
7. Make assistant coaches very aware of the coach/athlete relationship rules and that there are very definite lines that cannot be crossed.
8. **Passion trumps all.** The person that comes to mind when I think of passion is Howard Hausauer, an All-American thrower in our program who was my first throwing coach when I arrived at the University of Mary in 1993. He made demands of his athletes as he had trained. And that was extremely hard. Extremely! Howard quit football as a sophomore in high school despite being marked for stardom. He had his Dad build a throwing ring in a vacant lot near where he lived and he spent every day in the summer and fall throwing and training with Brian Fehr, a high school and college teammate. They trained every day, with the goal of getting in at least 100 throws a day. Howard went on to be a high school national champion in the shot put. That’s passion!

MOTIVATION

1. The purest form of motivation is inner motivation. You as a coach can build on that and take it to the next level for the athlete (s).
2. A great motivator is *peer pressure*. Your job is to assure that

the correct peer group or core group of athletes is providing the peer pressure.

3. Always encourage athletes to never be content. Life is a constant competition, whether you want it to be or not. Always be ready to adjust and reset goals. "You are either competing or you are not."—Pete Carroll, Coach of the Seattle Seahawks.

DISCIPLINE/RULES

1. Be honest, be consistent and be fair and you will have very few issues. Remember that people want discipline and structure in their life. They may not admit it, but they do.
2. Make decisions based on what is good for your program and typically you will make the right call.
3. Understand that not all decisions will be popular. You can't worry about what other people will think.
4. Admit when you have made a mistake and are wrong. You can't always be right.
5. Standards are much better than rules. Our premise was that there is a right way and a wrong way. Do what is right.
6. There is much more opportunity for a coach to be "backed into a corner" if you have an overabundance of rules. A coach loses credibility and respect very quickly if all of the rules are not enforced fairly and consistently.

DEFEAT

1. Every experience, whether positive or negative, can be valuable. Much can be learned from defeat and setbacks if you allow it to. Our motto: "Turn negatives into positives."

**BE HONEST, BE
CONSISTENT AND BE
FAIR AND YOU WILL
HAVE VERY FEW ISSUES.**

2. Use setbacks as opportunities to get better. Our women's team lost the conference indoor championship to an over-achieving University of Minnesota-Duluth team in 2014. We were simply out-performed. We went right back to work after the defeat and easily won the conference outdoor championship. How you rebound and move forward from failures and setbacks will really dictate your success.
3. Don't be afraid to allow your athletes to take risks and fail at times. Failure is a very, very strong emotion and much can be learned by the athlete when he or she takes risks and fails.

SHORTCUTS

1. There aren't any **shortcuts** to success. There are always more efficient and more organized methods and ways, but coaching is **plain hard work**.
2. There is no substitute for hard work. "Effort=Results"—Roger Penske, car racing owner and winner of the Indianapolis 500 18 times! More often than not, Roger is correct.

3. Time management and prioritizing with the correct organizational skills are key to success.
4. You do need an element of luck. But don't rely on it. You don't "luck out" very often. "The harder I work, the luckier I get"—Rolie Greeno, Jamestown (ND) College, legendary coach in a number of sports, including track & field/cross country.

CONCLUSION

One can see that the job of a coach is a big one. Huge in fact. And so very important. We will leave you with three important thoughts:

1. Understand that you have to be you. Don't be afraid to do your own thing and take a different path from others. Make your program your own. I became a much better coach when I figured out I had to coach like ME and not my mentors.
2. Understand that you as a coach/mentor are the most important element in an athlete's life. You are their vehicle to greatness! You provide the ride and the beneficiary of course is your program.
3. Coaching isn't a normal job. Coaching is a **LIFESTYLE**. My wife always says, "Normal people go to work on Monday morning and put in their 40 hours. Some enjoy it. Some don't. But it's a job." "Coaching isn't a job to you, " she would continue. "Coaching is who you are. It's your life. It's a lifestyle. And **she's right!**"

A TREND ANALYSIS OF MAJOR CHAMPIONSHIPS RESULTS IN MALE HAMMER THROWING (2008-2017)

A statistical study of factors affecting championship performance in the hammer throw.

BY DONALD G. BABBITT, THROWS COACH, UNIVERSITY OF GEORGIA

ABSTRACT

The study obtained performance results for a total of 93 male hammer throwers who participated in major championships (Olympic Games or World Championships) between the years 2008-2017. Data was analyzed to find performance trends in the finals of these championships relative to age, number of previous major championship appearances, seasonal best, and the average of the three best competition results for a given season. Downward trends were found for all of these metrics in the time period studied. Correlations coefficients were generated for six

different variables (age, number of major championships appearances, seasonal best, best three-meet average, result in qualifying, and performance quotient of qualification round [$PQ_{qualification}$] in relation distance thrown in the final and PQ_{final}). The strongest correlations to finals performance were found to be with actual distance thrown in the qualifying round ($r = .6493$, $p < .00001$), the average of the three best competition results of the year leading in to championships ($r = .5682$, $p < .00001$), and the seasonal best performance ($r = .5244$, $p < .00001$). There was also a strong correlation found between

the $PQ_{qualification}$ and the PQ_{final} ($r = .5317$, $p < .00001$). Results from this study may be useful in guiding coaches, athletes, and federations in their preparation for future major championships in men's hammer throw.

INTRODUCTION

The hammer throw is one of four throwing events (hammer, shot put, discus, and javelin) that is regularly contested in the event program for the sport of track and field. The Olympic Games and World Championships are considered the two most important competitions for the

hammer throw at the sport's highest level. In both of these events, the world's top 32 competitors are invited to compete for the gold medal, which is considered the sport's highest honor. There have been a number of studies that have examined various aspects of throwing performance in all four of these throwing events with many of these investigations having directed their effort to determine what performance metrics are correlated with throwing performance.

The majority of these studies have been focused on the relationship between biomechanical factors, such as release speed, release angle, and height of release, to describe the elements of throwing performance (Badura, 2010; Gutierrez, Soto, & Rojas 2002; Isele & Nixdorf, 2010; Morriss, Bartlett, & Fowler, 1997; Murakami, Tanabe, Ishikawa, & Ito, 2017). Additionally, a number of researchers have also examined the correlation between throwing performance and weight lifting exercises (Judge & Bellar, 2012; Judge, Bellar, McAtee, & Judge, 2010; Judge et al., 2011), or specific strength exercises (Bondarchuk, 2007; Bondarchuk, Ivanova, & Vinnitchuk, 1977; Karampatsos, Korfiatis, Zara, Georgiadis, & Terzis, 2017). However, there is a paucity of research on relative factors that may predict performance specifically in the Olympic Games or World Championships.

With regard to elite competitions (World Championships and Olympic Games) there is only a small amount of research that has attempted to quantify variables associated with success, or identify predictors of performance outcomes. In one of the initial pieces of research on quantifying variables for success,

Ward, Morrow, Omizo, and Michael (1979) reported that self-report personality measures showed little benefit as predictors of success for Olympic level athletes in the four throwing disciplines.

**THERE ARE SOME
UNIQUE FACTORS TO
THE MEN'S HAMMER
THROW'S DEVELOPMENT
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DIFFERENT FROM
THE OTHER MEN'S
THROWING EVENTS.**

In another study focusing on performance prediction, Pilianidis, Mantzouranis, Kyriakoulakis, Proios, and Kotzamanidis (2012) used regression analysis to chronicle high prediction of performance accuracy in the men's throwing events at the Mediterranean Games. The intent of this research was to provide coaches with information to help design training programs for success at the subsequent Mediterranean Games in 2013. The researchers reported that the men's hammer throw specifically had the highest prediction validity of all the throwing events.

With a similar focus on performance prediction, Zhang, Qin, Xu, and Zeng (2011) used document and mathematical statistics to predict the gold medal winning performance for the women's shot put in the 2012 Olympic Games, based on gold medal performances from the previous five Olympic Games between 1992-2008. As with the case of Pilianidis et al., the motivation for this

study was to provide information to guide a planning model for Chinese shot putters in preparation for the 2012 London Olympics. In retrospect, this study underestimated the winning throw by nearly a 70 cm, but with a subsequent doping disqualification for the winner, it was adjusted to 33 cm.

In a different line of investigation, Pavlovic and Idrizovic (2014) undertook a study to determine the difference in results between male and female javelin finalists at the London Olympic Games in 2012. The researchers also sought to see if the performances in the qualifying rounds were significantly related to results in the final rounds for both genders. No statistical differences were found for each gender's performance from the qualifying to final rounds; however, it was observed that, surprisingly, only 33% of the competitors threw better in the final than in qualifying. This led the researchers to suggest that further investigation into the cause for this drop in performance was warranted.

There are some unique factors to the men's hammer throw's development that make the nature of the future performance prediction distinctly different from the other men's throwing events. Over the past five decades, hammer throw technique has evolved significantly as an event with the advent of "modern" hammer technique pioneered by the throwers of the Soviet Union in the 1970's and 80's (Babbitt, 2003). Men's hammer performance levels reached a crescendo in the late 1980's and early 1990's with throwers such as Yuriy Sedykh and Sergey Litvinov throwing in excess of 86 meters. Top standards remained well above the 80-meter level through the 1990's and into

Table 1

The Averages Are Listed for Results in Final, Results in Qualification, Age, and Number of Major Championship Appearances for Each Major Championship				
Major championship	Final (m)	Qualification (m)	Age (yrs)	MCA
2008 Olympic Games	79.18 ± 2.14	77.79 ± 1.43	29.0 ± 2.67	6.0 ± 2.08
2009 World Championships	76.25 ± 2.62	77.07 ± 0.92	28.7 ± 3.44	5.4 ± 3.04
2011 World Championships	78.26 ± 1.81	76.97 ± 0.83	31.1 ± 4.38	6.7 ± 3.96
2012 Olympic Games	76.54 ± 2.48	76.63 ± 1.55	31.5 ± 3.98	6.3 ± 3.86
2013 World Championships	77.92 ± 2.08	76.97 ± 1.19	31.3 ± 4.85	7.4 ± 3.88
2015 World Championships	76.23 ± 2.48	76.06 ± 1.08	28.1 ± 4.07	3.8 ± 2.64
2016 Olympic Games	75.52 ± 1.76	75.07 ± 1.61	29.9 ± 5.91	4.6 ± 3.67
2017 World Championships	76.78 ± 1.58	75.60 ± 0.72	27.1 ± 5.35	3.5 ± 2.62

Note: MCA = major championship appearances.

Table 2

The Averages are Listed for Seasonal Bests, Average of the Best Competition Results for that Year, Performance Quotient in Final, and Performance Quotient in Qualifying for Each Major Championship				
Major championship	SB	X (m)	<i>PQ_{qualification}</i>	<i>PQ_{final}</i>
2008 Olympic Games	80.48 ± 1.79	79.70 ± 1.96	99.2 ± 2.13	97.6 ± 1.84
2009 World Championships	79.06 ± 1.25	78.56 ± 1.31	96.8 ± 3.35	98.2 ± 1.57
2011 World Championships	78.85 ± 1.26	78.20 ± 1.24	99.8 ± 2.33	98.2 ± 1.54
2012 Olympic Games	77.50 ± 2.39	76.86 ± 2.26	99.6 ± 3.76	99.7 ± 3.39
2013 World Championships	79.13 ± 1.57	78.54 ± 1.49	99.0 ± 2.38	97.9 ± 1.22
2015 World Championships	78.34 ± 2.32	77.63 ± 2.25	98.0 ± 1.98	97.8 ± 2.23
2016 Olympic Games	77.95 ± .966	76.82 ± 1.24	98.3 ± 1.79	97.8 ± 1.50
2017 World Championships	78.42 ± 1.87	77.77 ± 1.88	98.7 ± 0.72	97.2 ± 1.62

Note: SB = seasonal best; X= 3 best meet average.

the early 2000's. However, unlike the majority of the men's throwing events, hammer performance levels have begun to decline over the past decade, and it is now a rare exception to have a thrower performing over the 80-meter level.

The purpose of this study was to identify the current performance trends for the men's hammer throw at the major championships over the past 10 years, in order to contrast and compare with the body of research in this area, and to shed a brighter light on the impact of various performance metrics for the event. In addition, calculations were made to identify significant correlations

between selected variables going into competition to assess any significant influence they had on performance. Given the apparent regression of men's hammer performance over the past 10 years, it was hoped that key indicators, such as age, championship experience, and previous performance, could be tested so that coaches and athletes, alike, will be better able to predict, select, and prepare training for greater success in men's hammer at the major championships. It is hypothesized that factors such as age, championship experience, and previous performance will be statistically significant predictors of major championship performance.

METHODS

The study obtained performance results for a total of 93 men's hammer throwers who participated in major championships (Olympic Games or IAAF World Championships) between the years 2008-2017. Performances by athlete's who had failed doping tests at any of these competitions were not considered for the study. The performance data was derived from competition results from both the official IAAF (n.d.) and Tilastopaja (n.d.) websites. Data for each athlete who competed in the final of each championship were recorded for age, number of major championship appearances,

qualification performance, final performance, season best, and the average for the three best competition results for that given year. Additionally, a performance quotient (PQ) was calculated for both the qualification and final rounds for each major championship in order to quantify how well they performed to their potential based on their seasonal results going into the championship. PQ was calculated by dividing the distance thrown in either the qualification round (Q) or final round (F) of the championship by the average of the three best competition results for that season (X) using the following formulas.

$$PQ_{qualification} = \frac{Q}{X} ; \quad (1)$$

$$PQ_{final} = \frac{F}{X} . \quad (2)$$

Units for the PQ are expressed as a percentage. A score of 100% (expressed as 100.0) would be earned if the qualifying or final performance would be equal to the average of the three best competition results for the given season. The best three-meet average (X) was calculated by dividing the sum of the three best competition results (x_1, x_2, x_3) for a given season by the number of competitions (three) as shown in the following equation:

$$X = \frac{1}{3} (x_1 + x_2 + x_3) \quad (3)$$

Averages were then tallied for age, number of major championship appearances, qualification result, final result, season best (SB), best three-meet average (X), qualification PQ , and final PQ for the competitor groups for each major championship for the years that were studied. Calculations of Pearson's correlation coefficient for six different variables (age, number of major championship appearances, seasonal best,

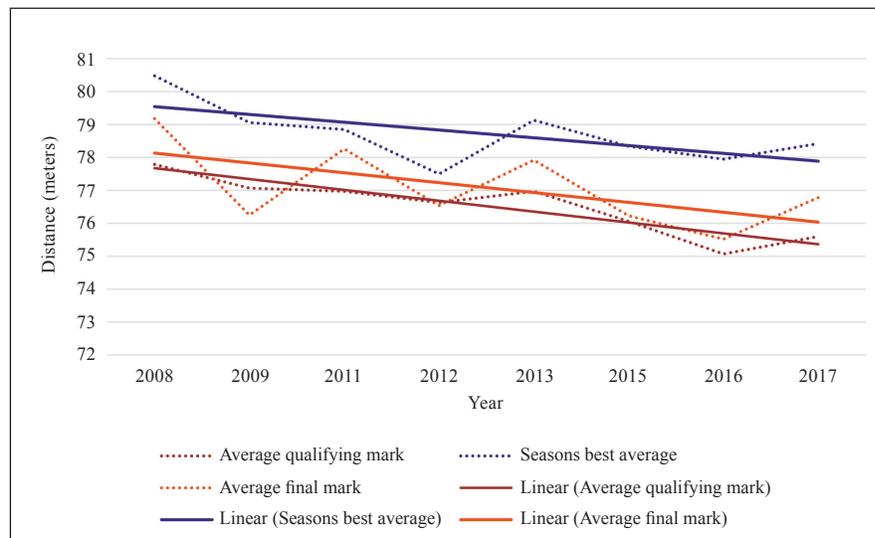


Figure 1: Trends in men's hammer performance at major championships between 2008-2017.

best three-meet average, result in qualifying, and $PQ_{qualification}$ in relation distance thrown in the final and PQ_{final} . A current statistical software package (IBM SPSS Statistics Version 25.0) was used to perform the analysis and statistical significance was set at $p < .05$.

UNLIKE THE MAJORITY OF THE MEN'S THROWING EVENTS, HAMMER PERFORMANCE LEVELS HAVE BEGUN TO DECLINE OVER THE PAST DECADE

RESULTS

Data collected (final result, qualifying result, age, major championship appearances, seasonal best, and the average of the three best competition results) from the results for the finalists in all the major outdoor track and field championships from 2008 to 2017 were averaged and presented in Tables 1 and 2. The performance quotients for both the

qualification and final rounds were also calculated and averaged. These appeared to remain steady through this time period (see Tables 1 and 2). As could be expected, the performance quotients were slightly higher for the final round compared with the qualifying round due to the three extra attempts awarded in the final round for the top eight throwers, and the desire to achieve a maximum result by all finalists as opposed to a fixed qualifying result. Results for the average qualifying mark, final mark, and seasonal best were plotted on a chart and trend lines were calculated and presented in Figure 1 to show the downward trend in hammer performance over the past 10 years. The linear trend lines in Figure 1 clearly highlight a steady decline of nearly two meters for each performance category over the past 10 years for the average result of these three variables. Negative trend lines were also observed for age (Figure 2), major championship appearances (Figure 3), and $PQ_{qualification}$ and PQ_{final} (Figure 4).

Tests were performed for Pearson's

correlation coefficient (r) for six different variables (age, number of major championships appearances, seasonal best, best three-meet average, result in qualifying, and $PQ_{qualification}$ in relation distance thrown in the final and PQ_{final}). The results of the correlations were reported in Table 3 in descending order from highest to lowest correlation between variables. The strongest correlations to finals performance were found to be with actual distance thrown in the qualifying round ($r = .6493, p < .00001$), the average of the three best competition results of the year leading in to championships ($r = .5682, p < .00001$), and the seasonal best performance ($r = .5244, p < .00001$). There was also a strong correlation found between the $PQ_{qualification}$ and the ($r = .5317, p < .00001$). Positive correlations of statistical significance were also found between the number of major championship appearances and the performance in the final ($r = .3094, p < .01$) and the PQ_{final} ($r = .3196, p < .01$).

Conversely, statistically significant negative correlations were found between both the seasonal best ($r = .2773, p < .01$) and the average of the three best competition results of the year leading in to championships ($r = -.2582, p < .05$) and the PQ_{final} . The negative correlations would be expected given that athletes who are performing better going into the major championships would register a lower PQ_{final} compared to an equal performance in the final from a competitor with a lower seasonal best or X . Finally, positive correlations were also found for an athlete's age and the PQ_{final} ($r = .2658, p < .01$), and the distance thrown in the qualifying and the PQ_{final} ($r = .2509, p < .05$). No statistical significance was found between a competitor's

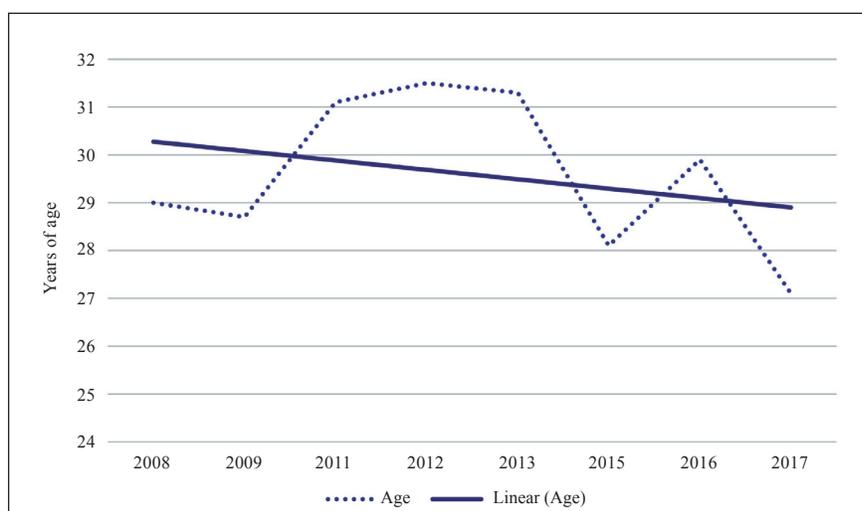


Figure 2: The trend-line for average age of the major championship finalists in men's hammer from 2008 to 2017.

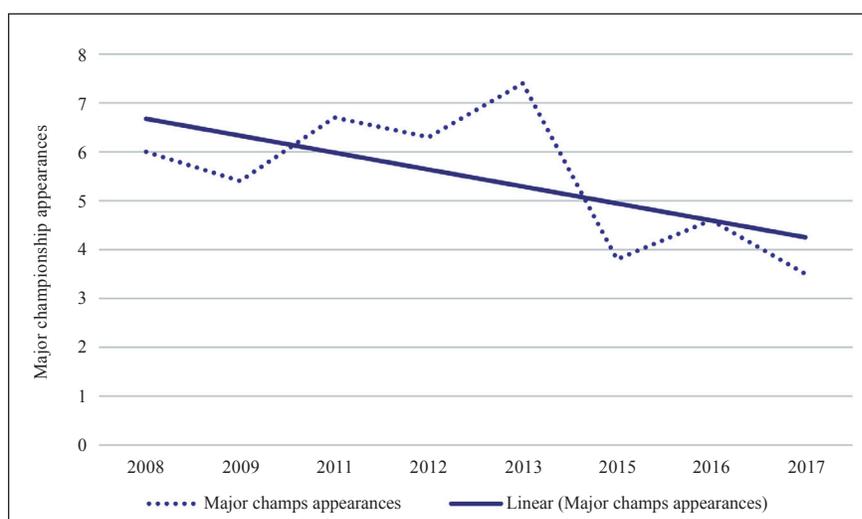


Figure 3: The trend-line for the average number of previous major championship appearances of the major championship finalists in men's hammer from 2008 to 2017.

age ($r = .1615$) or the $PQ_{qualification}$ ($r = -.0878$) and the performance in the final.

DISCUSSION

The purpose of this study was to highlight the current performance trends for the men's hammer throw at the major championships over the past 10 years, and to test the significance of selected performance metrics for the event. More specifically, in depth analysis was

conducted to uncover significant correlations between selected variables going into the major competitions in order to assess any significant influence they had on performance. A small portion of the overall analysis was conducted to see whether performance in the qualifying rounds would play a significant role in the performance in the final round.

Statistical analysis revealed the distance thrown in the qualifying round did have the highest

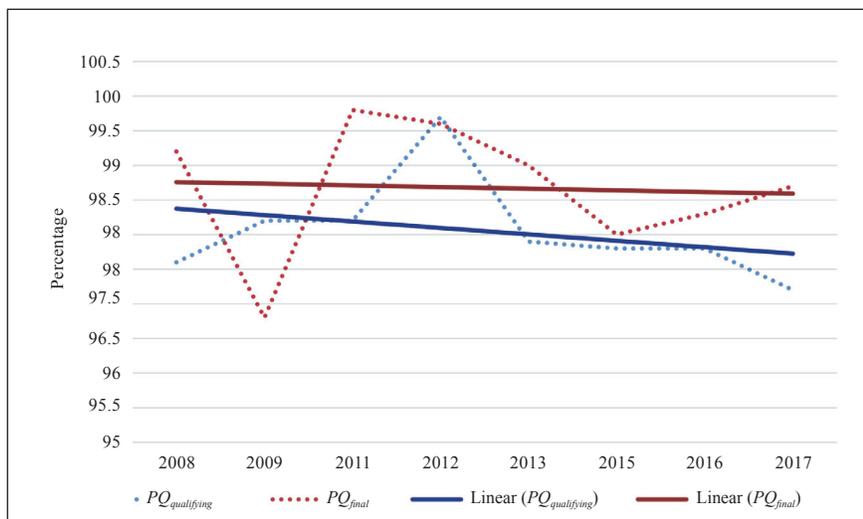


Figure 4: The trend-line for the performance quotients for the qualifying ($PQ_{qualifying}$) and final (PQ_{final}) rounds.

correlation with performance in the final round of all the variables that were studied ($r = .6493$). In an analysis of similarly related variables, the relationship between the $PQ_{qualification}$ and the PQ_{final} also displayed statistical significance. This supports the assumption that the competitors who were performing the best, both in terms of PQ and actual distance thrown in the qualification rounds, would be more likely to produce the best results in the final. With regard to variables that might be predictors of success in the finals as one enters the major championship, both the athlete's seasonal best, and average of their three best competition results (X) were significantly correlated with performance in the finals. This finding suggests that the competitors who are performing the best during the season will also perform best in the major championships of that year as well.

Previous experience, in the form of number of appearances in major championships, showed a significant correlation ($p < .01$) with performance in the finals in terms

of distance thrown and execution (PQ_{final}). The average number of appearances for the finals in the major championships ranged from 3.5 to 7.4 previous appearances, but with a definite decline in average number of appearances from 2013 to 2017. This could suggest a "changing of the guard" with the retirement of some long-time, high-performing throwers during this period (e.g., Koji Murofushi, Primož Kosmus, and Szymon Ziolkowski). The correlation with experience would be expected since the hammer throw is considered a sport of repetition (Murofushi, Babbitt, & Ohta, 2017), and the peak age for elite performance is usually not achieved until the age of 28 years of age (Babbitt & Saatara, 2014). The period of prime performance for men's hammer throw can extend well past 30 years of age for elite throwers which supports the notion that maturity and experience are closely aligned with top performance (Babbitt, 2016). These findings align with the average age ranges (27.1 to 31.5 years of age) of the major championship hammer finalist competitors in this study by Babbitt.

With regard to age, in and of itself, as a variable for success in the major championships, statistical significance was only found to be positively correlated with execution (PQ_{final}) in the finals ($p < .01$). However, the correlation between age and PQ_{final} ($r = .2658$) was not as high as observed for the number of previous major championship appearances and PQ_{final} ($r = .3196$), thus the results suggested that actual major championship experience may be more important for success than the amount of overall years in the sport. Age and actual throwing distance in the final was not found to be statistically significant which suggests that while age may allow for the benefit of more experience, it could also be offset by diminished physical capacity, and therefore, not a significant factor.

THE CORRELATION WITH EXPERIENCE WOULD BE EXPECTED SINCE THE HAMMER THROW IS CONSIDERED A SPORT OF REPETITION

Finally, performance efficiency in qualifying $PQ_{qualification}$ was also found to be without significance which insinuates that hammer throwers who perform efficiently enough in the preliminaries to get into the final may not necessarily be talented enough to do well in the finals no matter what their level of execution.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, this investigation showed that the variables of age, major championship experience,

and seasonal performance (both *SB* and *X*) going into the major championship displayed a significant positive correlation with performance in the finals of the major championships. These results support the hypothesis that the factors of age, major championship experience, and seasonal performance would be statistically significant predictors of major championship performance. Given these results, federations may want to take these factors into account when selecting participants for a major championship in the men's hammer throw. While these may not be the only factors to consider, they could be among the most important when taking all variables into account.

Beyond the statistical analysis of the various performance metrics with hammer performance at the major championships, it is striking how the performance trends for the actual throwing results project a downward slope. Since the 2008 Olympic Games, the average performance for the men's hammer finalists in both the qualifying and final rounds has diminished by over 2 meters (see Table 1). A corresponding drop of nearly 2 meters has also been seen for both the seasonal best and the average for the three best meet results within a given season (see Table 2).

It is very clear that the overall level of elite hammer performance has dropped altogether in the last 10 years. Potential causes for this drop could entail the following: (1) less support for men's hammer throwing from traditionally strong hammer throwing federations, (2) increased and stricter drug testing policies, (3) a retirement of a large number of high-level hammer throwers who maintained a high standard

for a long time, and (4) decreased interest and ability to stay in sport by high-level competitors due to the relegation of the hammer from the Golden/Diamond League, and fewer professional prize money opportunities. Further qualitative research will be necessary to study the comprehensive impact of these variables on men's hammer performance worldwide. It is quite possible that a further decline in men's hammer performance may continue if these developments are to continue. Member federations may want to take into account these trends when making high performance decisions and plan accordingly.

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A PRACTICAL GUIDE TO FIBERGLASS POLE VAULTING

This article, by longtime vault observer Bussabarger, is a brief synopsis of fiberglass vaulting technique. Bussabarger has studied a large number of accomplished vaulters over the years and has made conclusions based on analysis of their technique. Perhaps the most important takeaway of this study is that there has always been a great deal of individual variation in execution among the best vaulters and there is no hard-and-fast one way to vault.

BY DAVID BUSSABARGER

At its most fundamental level all pole vaulting (regardless of the type of pole used) is about (1) Developing energy in the form of speed and drive during the run, which is the primary source for powering the vault; (2) Converting the forward energy of the run into vertical energy for height during the vaulting action (correctly changing the direction of the flow of energy through the vault). In fiberglass vaulting, given correct overall execution of technique, the recoil of the pole adds an extra vertical boost to the vault.

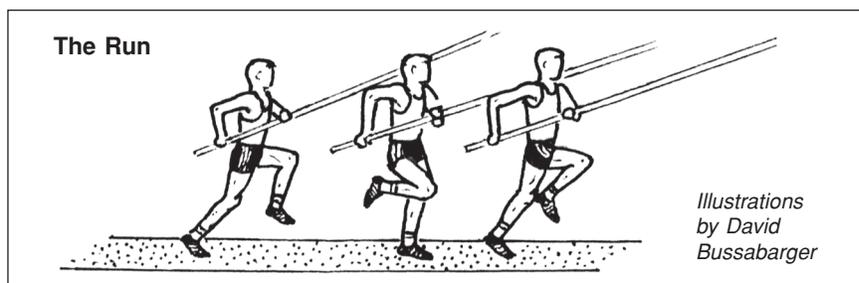
Analysis of dozens of elite vaulters, going back to the early 60's, shows that there is a significant stylistic

variation among all vaulters that continues to this day. This leads to the obvious conclusion that stylistic variation amongst fiberglass vaulters is both natural and the norm. Therefore every coach and vaulter should accept and embrace this fact. It makes no more sense to expect all vaulters to conform to one supposedly ideal technical model

than it does to expect all vaulters to wear the same size track shoe.

THE RUN

The length of the run among accomplished vaulters is typically between 120 to 140 feet. During the run the pole is carried at an upward angle of 45 to 90 degrees



to reduce the effective carrying weight of the pole.

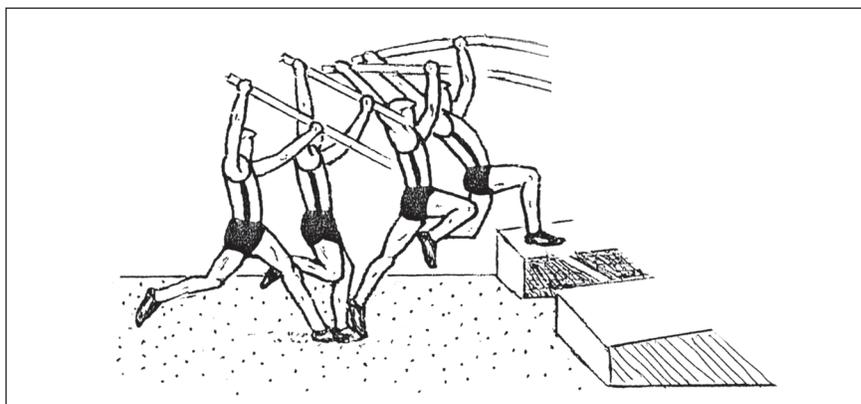
It is of utmost importance for the vaulter to emphasize the development of maximum speed and drive during the final strides of the run. To achieve this many vaulters begin the run slowly and then progressively gain speed and drive into the takeoff. Other vaulters quickly gain speed at the beginning of the run and then maintain top speed and drive into the takeoff.

THE PLANT

The goal of the plant is to secure the tip of the pole in the box and to put the vaulter in the best possible position to execute the takeoff.

The plant is executed in two stages: (1) On the penultimate stride, the top hand on the pole is curled upward close to the right side of the vaulter's head (for right handed vaulters); (2) On the final stride the top arm is extended fully upward overhead creating the highest possible pole angle.

Some vaulters lower the pole to horizontal before beginning the planting action while others begin dropping the tip of the pole at the same time they begin executing the plant.



Tim Mack: Takeoff

THE TAKEOFF POINT

Analysis of dozens of elite vaulters over the years indicates that the majority of them take off "underneath" (the front of the takeoff foot is ahead of the vertical plane of the top hand when the plant is correctly completed and the vaulter is in an erect position over his/her takeoff foot). The probable reason for this is that, unlike rigid pole vaulters, fiberglass vaulters must emphasize driving forward and into the pole as they take off to facilitate bending the pole.

The evidence also shows that the takeoff point among individual elite vaulters can vary from 2" to 3" behind the vertical plane of the top hand ("out") to as much as 18" ahead of it ("under") while still producing vaults of 6m or better.

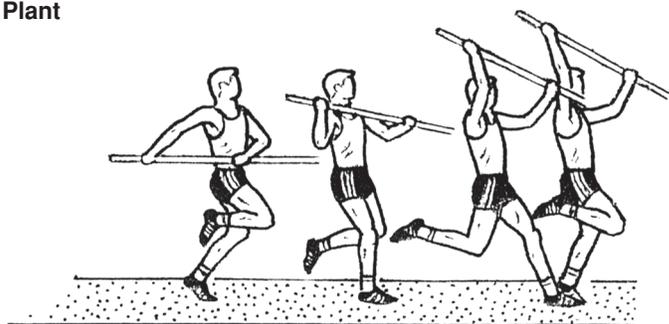
Therefore, the logical conclusion that there is no one best takeoff point for all vaulters. Rather, coaches and vaulters should accept that each individual has a natural takeoff point that can vary substantially from vaulter to vaulter and still produce outstanding results.

THE TAKEOFF

The takeoff should forcefully propel the vaulter inward and slightly upward (at about a 20-degree angle) as he/she leaves the ground, in conjunction with run-up speed and drive. Given correct execution the takeoff begins the conversion of energy by initiating a very gradual change in the vaulter's direction of movement at this point in the vault.

To achieve correct results the vaulter must first move as continuously as possible over the takeoff foot in an erect position, while at the same time springing off the ground and into the air. Secondly the vaulter must lead the takeoff action with the torso, where the Center of Mass is located. As the torso moves inward it causes the top arm to flex back and become taut, while at the same time the takeoff leg also flexes back. This process results in the classic reverse "C" position at the completion of the takeoff. Overall tension

The Plant



in the body, relative to the pole, is then unleashed after the takeoff to power the following swing.

A number of different variations in the action and positioning of the lead leg during the takeoff can be seen among accomplished vaulters. Most drive the lead leg forward and upward through the takeoff action. Another common variation is characterized by lifting the lead leg upward in a folded or bent position during the takeoff. A relatively small number of elite vaulters use a modification of rigid pole takeoff technique (the lead is driven upwards at the instant of takeoff and then extended downwards immediately thereafter). Finally, a few elite vaulters lift the bent lead leg upward as they takeoff and then extend it outward like a hurdler once airborne.

The most important impact of these particular variations is the difference they make in the position of the vaulter's C.O.M. during the takeoff action. As a general rule the lower the position of the lead leg, the lower the vaulter's C.O.M. will be. This, in turn, helps conserve available forward momentum. Conversely, the higher the vaulter's lead leg position, the higher the vaulter's C.O.M. will be, which tends to diminish available forward momentum. It is noteworthy that extremely high grippers like Shawn Barber (17-4), Thiago Braz (17-2) and Renaud Lavillenie (17') all display relatively low lead leg positioning, in conjunction with a pronounced forward driving action during the takeoff. Sergey Bubka, who had high lead leg positioning during the takeoff, is an exception to this rule. His grip of 17' was primarily based on his exceptional runway speed.

Most contemporary fiberglass vaulters emphasize using active pressure and extension with the lead arm against the pole during the takeoff. It is very important that the lower arm action and positioning does not block the inward progress

***MOST CONTEMPORARY
FIBERGLASS VAULTERS
EMPHASIZE USING
ACTIVE PRESSURE AND
EXTENSION WITH THE
LEAD ARM AGAINST
THE POLE DURING THE
TAKEOFF.***

of the vaulter's body (particularly the vaulter's torso) at this point in the vault. If this happens the mechanical effectiveness of the takeoff will most likely be impaired. A popular solution to this problem is emphasizing leading with the upper torso or chest during the takeoff. This produces a more concentrated and forceful forward driving action, which helps push the extended lead arm backward as the chest moves inward.

THE SWING

The swing is characterized by the forceful forward-to-upward sweeping action of the elongated trail leg while the vaulter hangs from the extended top arm (note that in some cases both the vaulter's legs are elongated during the swing and as a result, they sweep both legs). This action begins the rotary inversion of the body and is a critical stage in the conversion of energy.

Most accomplished vaulters today either emphasize using pressure and extension of the lead arm against the pole continuously dur-

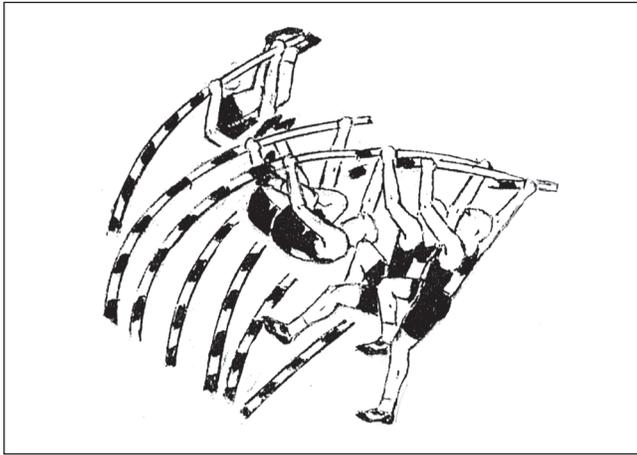
ing the takeoff and swing or they allow the lead arm to flex during the takeoff and then extend it during the swing. In both cases this action helps the vaulter bend the pole. Another important consideration is that over the years fiberglass vaulters have learned to substantially increase their forward driving action during the takeoff. This has helped promote higher hand grips but has also created an unintended side effect. The greater the forward drive generated during the takeoff the more centrifugal force will be generated during the swing. Pressure and extension in the lead arm helps prevent the vaulter from being sucked outward and into the bar during the vault.

THE ROCK-BACK

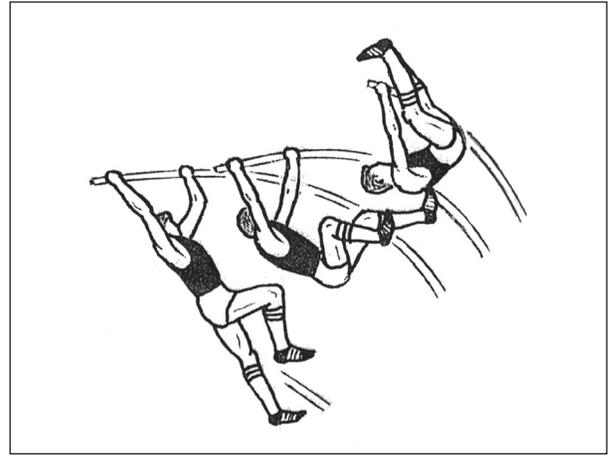
The rock-back completes the rotary inversion of the body and sets the vaulter up for the completion of the energy conversion process during the following vertical extension.

Some vaulters, like the legendary Sergey Bubka, continue sweeping the extended trail leg around and back until it merges with the end of the pole above the top hand. However, because the vaulter begins working increasingly against gravity once the trail leg passes beyond a 45-degree angle to the ground, most accomplished vaulters begin shorting their radius of rotation by tucking soon after this point. This action conserves available rotary momentum, which makes effectively completing the rock-back easier.

A number of different variations of the completion of the tucking rock-back style can be seen among elite vaulters. Some vaulters pike the feet back to the top of the pole



Jeff Hartwig: Swing/Rock-Back



Sergey Bubka: Swing/Rock-Back

after the initial tucking action, while others continue pressing the knees towards the chest and moving the feet back until they merge with the top of the pole. Another popular variation entails bending the lead leg and foot back past and outside the top arm after the initial tucking action.

There are varying opinions as to whether the vaulter should delay for an instant at the end of the rock-back before extending ("tuck and shoot") or try to move as continuously as possible from the rock-back into the subsequent vertical extension. The evidence shows

that outstanding results have been achieved using either method.

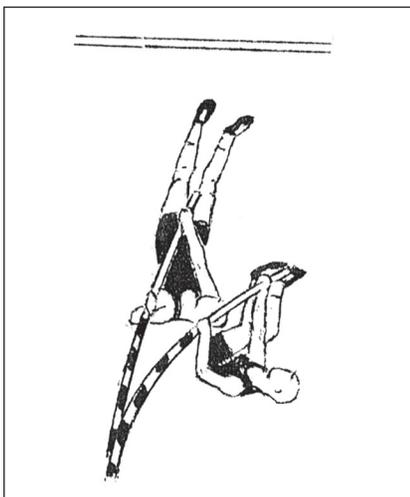
methods have produced outstanding results.

THE VERTICAL EXTENSION

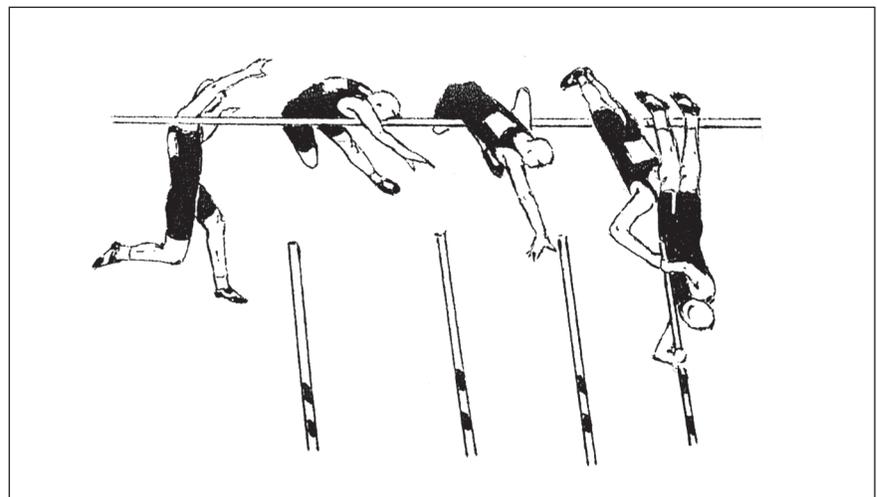
Once the rock-back is correctly completed the vaulter should thrust his/her hips and legs vertically in line with the axis of the pole. Some vaulters emphasize timing the extension of the body with the recoil of the pole to maximize the catapultic action of the vault. Others thrust their bodies vertically with as much force as possible, maximizing the power generated during the vertical extension. Again, both

THE PULL/TURN

While emphasizing continuing to move as vertically as possible, the vaulter should begin twisting his/her hip and right shoulder (for right handers) to the left, while at the same time beginning a "round house" hook-like pulling action with the top arm. If the preceding phases of the vault have been completed correctly, the pull/turn should require minimal physical effort and should flow smoothly into the following push-off.



Hartwig: Vertical Extension



Hartwig: Pull/Turn, Push-Off, Clearance

THE PUSH-OFF

The push-off is essentially the natural continuation of the pull/turn action and the culmination of all the preceding phases (how far the vaulter can vault above his/her hand grip is primarily determined by how well the vaulter has executed the preceding phases of the vault). Like the pull/turn, the push-off should require minimal physical effort to execute.

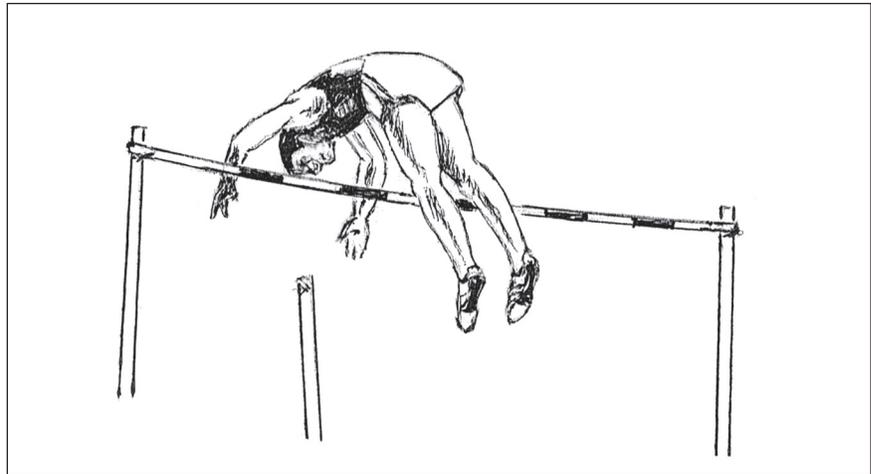
THE CLEARANCE

Once the vaulter is above the bar and the pole has been released, the arms should be lifted smoothly overhead and the body should naturally rotate about the bar. The rotation of the body should continue until the vaulter is in position to land on his/her back in the pit.

The vaulter should not rush the lifting of the arms too soon after the release of the pole. Doing so can push the vaulter's body into the bar and cause a failed attempt.

HAND SPREAD ON THE POLE

Hand spread on the pole among 6m or better vaulters varies from about 18" for Sergey Bubka to an estimated 30" for Jean Galfione. A relatively narrow hand spread makes it easier to push the torso inward during the takeoff. Therefore it is definitely beneficial for vaulters who utilize pronounced pressure and extension in the leading arm on the pole during the takeoff. However a narrow hand spread also tends to reduce the vaulter's control and balance during the execution of the vault. Conversely a wide hand spread improves the vaulter's bal-



John Pennel: Clearance

ance and control but also tends to impede the inward movement of the torso during the takeoff. It is recommended that every vaulter experiment to find a hand spread that produces the best results for the given vaulter.

HEAD POSITIONING

The positioning and weight of the head have a significant impact on the action of the vaulter during the vault. As a general rule the vaulter should "look" in the direction he/she wants to go. That means vision should be straight ahead or slightly elevated as the vaulter takes off (vision should not be elevated above 20 degrees, which is roughly the angle of a well executed takeoff or below parallel to the ground). It is recommended that the vaulter rotate his /her head back in sync with the rotation of the body during the swing and rock-back. Vision should be directed vertically and not at the bar at the completion of the rock-back and during the vertical extension. The head should be aligned with the spine (becoming a natural extension of the spine) during the execution of the pull/turn and the push-off. Lastly, the vaulter

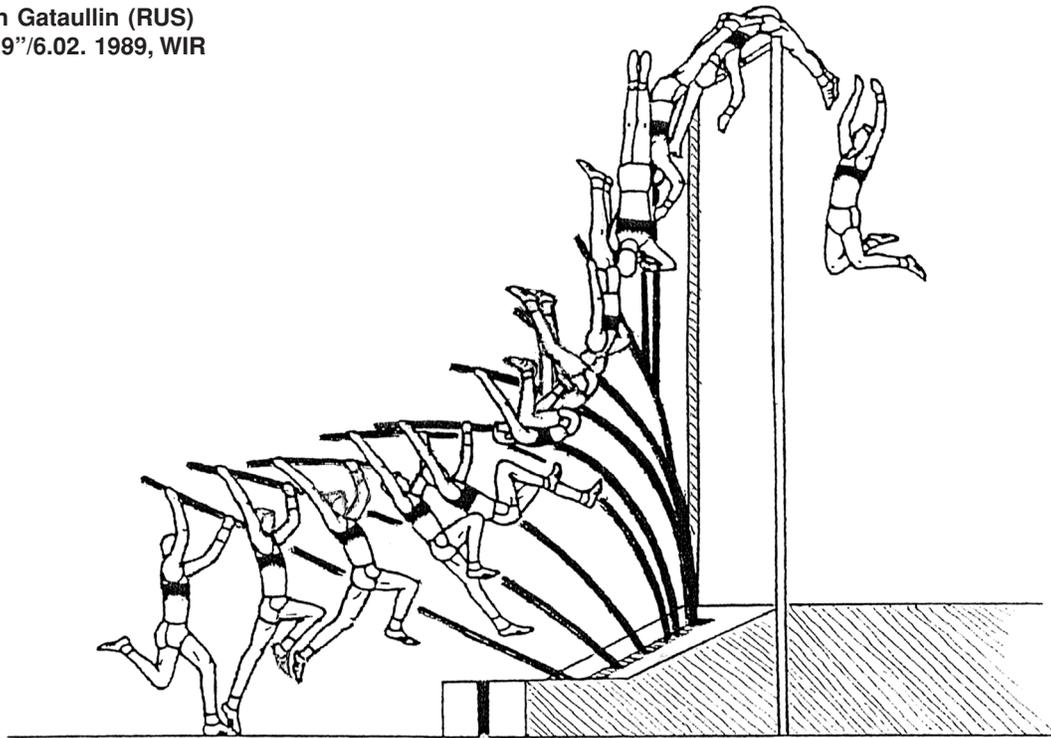
should not rush throwing the head back once the pole is released, which can push the vaulter into the bar and cause a failed attempt.

POLE STIFFNESS

Few people today know or remember that the majority of elite vaulters in the mid-1960's, such as John Pennel, Fred Hansen and Bob Seagren, used roughly equal weight poles with great success (their poles were rated about equal to their weight and grip). All three of these vaulters achieved push-offs of 3 feet or better using these poles. Pennel, in particular, achieved a push-off of 3'8" on his WR jump of 17'6¼" in 1966. The reason vaulters used such light poles at this time was because they were still learning and working out how to bend the pole and the gaps between pole sizes were relatively large.

By the late 1960's it was commonly understood that the stiffer the pole the vaulter could effectively bend and use, relative to his body weight and grip (there were no female vaulters at this time), the greater the recoil force of the pole. This,

Rodion Gataullin (RUS)
PR 19'9"/6.02. 1989, WIR



in turn, generally improved the vaulter's push-off distance. Over the years vaulters have developed modifications in execution, like "stiff arming" the pole with the leading arm and emphasizing forward drive during the takeoff, that promote the bending of the stiffest possible poles (up to 40lbs or more overweight). Yet relatively few vaulters today can exceed Pennel's push-off from 1966.

The writer believes that today's vaulters place too much emphasis on getting onto the biggest pole possible and moving too quickly to a bigger pole when the one they are on feels "soft". It is the writer's view that early fiberglass greats achieved such good results with light poles because they kept using the same pole, often for years. In effect they adjusted their execution to their pole and learned how to get

the most possible out of it.

This is not to say vaulters shouldn't use overweight poles. Rather, a little moderation might be in order. This point is particularly important when working with novices. Given good development of technique, a high school boy should be able to achieve a push-off of 2 feet using an equal weight pole (girls 1 foot).

PLAN AHEAD **BUDAPEST 2023**



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THE POLE VAULT, A VIOLENT BALLET

*This is an excerpt from the forthcoming book, "The Pole Vault: A Violent Ballet,"
by Rice University Assistant Coach David Butler.*

BY DAVID BUTLER

Back in the day, when vaulters first used wood, then bamboo, then steel and aluminum, they had to figure out the ways to get the pole to accelerate toward the pit. This was very important, because these pathfinders of the pole vault, had to land on upturned earth, sand, or sawdust (or a combination of all three) and they did not want to come up short. Landing was hard enough without falling back onto hard ground. Rough landings did not feel good. Another reason these forerunners developed the techniques they practiced in the vault was to clear a higher bar. They wanted medals, records, and PRs. So, the straight pole or steel vault was created and progressed right up to the invention of fiberglass.

As the early fiberglass vaulters learned the mechanics of a bending pole, they utilized their longstanding, proven straight pole techniques and applied them to moving a fiberglass pole.

Techniques they practiced that strongly apply to rotating fiberglass.

1. Jump off the ground through the center of the pole.
2. Both hands move up, shoulders elastically expand, bottom elbow bends.
3. Swing long and fast.

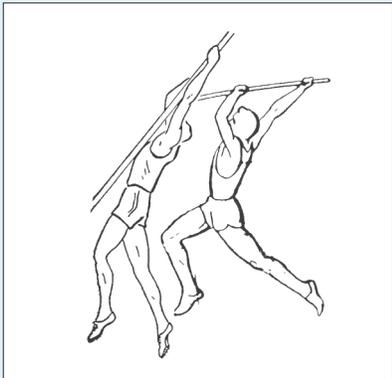
I know this seems simplistic, but that's the beauty of it. Jump like Warmerdam, Gutowski, Richards, Meadows, or Smith, and your straight pole work will morph into a beautiful, accelerating vault.

To be able to enter, the vaulter must allow his/her body to elastically expand into and toward the pole. The old straight-poles did this by shifting the bottom hand up to the top hand, creating an open, stretching and casting of the hips up toward the pole. Both hands together and stretching up and back, accelerated

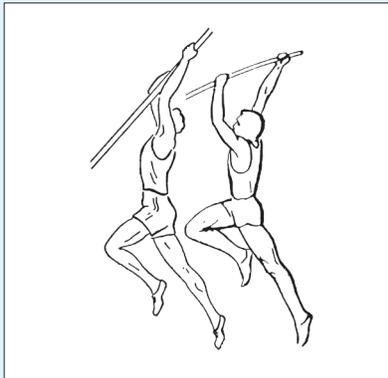


Mondo Duplantis, the new breed of vaulters, entering the bend of the pole through his bottom arm.

Entering the Pole: Entering the pole is essentially “the vaulter’s body becoming part of the pole.” Entering the bend of the pole means that the “vaulter bends with the bend.”



Bubka: Notice the vertical line from the elastic bottom hand through the hips at takeoff, very similar to Warmerdam’s handshifting elastic position.



Warmerdam: Notice in this drawing how his hands move up as the chest and hips open and cast into and through the pole’s rotation.

3. Entering the pole as the vaulter jumps through his/her left elbow, the bent arm creating a “window” for the vaulter to jump through. Note: Look at any photo from the ’60s, ’70s, and ’80s, shot from behind the pit, and you will see this window.

In the late 1980s and early ’90s, a few vaulters began a new technique. The blocking of the arms/shoulders became the big left arm and force-bending the pole became all the rage. To this day, many vaulters block off the ground, then break the pressure to swing past the pole. Yes, this blocking, breaking, or rowing to attempt to get upside down IS a way to pole vault, but I believe the natural, historical method moves the pole in a better air pathway.

the body into a powerful giant swing to vertical.

In fiberglass vaulting, the bottom arm bends at the elbow and the hand expands to a vertical line from the hand and through the hips. This is entering the pole and accelerating the pole.

The sequence of learning to get this “elastic plant” extended above the head?

1. Fibernose, where the left hand/arm breaks into the face and then the vaulter swings. Note: Try blocking with a straight, stiff bottom arm and see if the swing accelerates as fast and the pole moves to vertical.
2. Fiberhead, as the vaulter begins to make more space off the ground and pushes the pole a little higher, the bottom hand bends into and just above the forehead of the vaulter. This extension mirrors the vaulters

of the 1960s and 1970s. This is how these early pathfinders found the way to make that bending pole MOVE, not just bend.

Entering the pole in what is called elastic can really create a high invert on top of the bend of the pole.

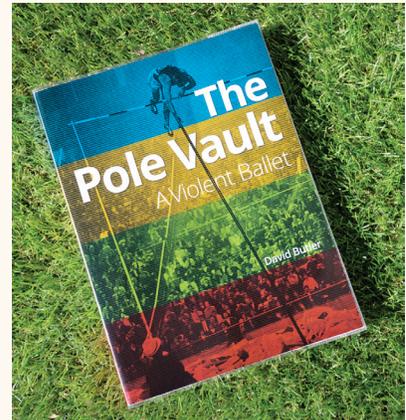
Open Up, Bend into the Bend: Being elastic and allowing arms to move up at takeoff, creates the acceleration of the hips up and forward. With the hips engaged, the swing can now accelerate. As the vaulter makes the “inverted C,” the body bends into and with the bend of the pole. This bending makes the vaulter’s body become the pole. An elastic opening is a very powerful movement that accelerates the pole toward vertical, creating great pole speed.



I suppose Sergey Bubka is the one to study, but most of our youth do not study the vaulters of the past. I truly believe that we all must know who came before, to know where we are going.

The gradual raising of the bottom arm from a flexed, frozen position to a full extension is a natural progression of pushing the pole higher and higher toward the vertical. It is a great way for the vaulter to learn to pole vault. It is a technique born in sawdust and sand.

David Butler, who some have called the “zen master of the pole vault” has been a track & field coach for more than 40 years. For the past 20 years, he’s been an assistant coach at Rice University. A recognized historian and technician of the pole vault, he has given clinics in Thailand, Japan, Finland, Germany, Canada, the Dominican Republic and Puerto Rico.



Today

Even today, handshifting or narrow-grip straight pole vaulting is a fantastic way to teach vaulters to move the pole, rotate the pole, accelerate the pole and therefore, accelerate the swinging body of the vaulter.

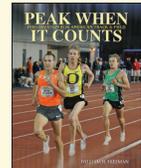
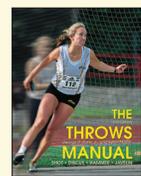
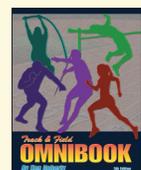
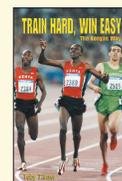
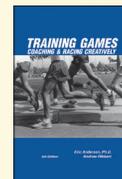
Bend with the bend of the pole. Enter the pole and feel the power of the vaulters of history. Vault in their spike steps of the greats of the past. Vault like a sawdust vet.

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LIFE LESSONS FROM CROSS COUNTRY— UPDATED 2019

In the September/October 2009 issue of the periodical Run Ohio, "Life Lessons from Cross Country" first appeared. This piece is adapted from the revised, updated version of the original which appeared in the November 2019 issue. Run Ohio, Matt McGowan, editor, P.O. Box 238, Granville, OH 43023.

BY ROD O'DONNELL

In an attempt to keep our wonderful sport vibrant and relevant in our athletic world, we must sell it and communicate how special it truly is to parents, coaches, athletic administrators, and others who are involved.

Cross-country is a sport that teaches many life lessons that our current culture does not promote or fails to emphasize. These traits not only will help athletes perform better, but they will make their lives better, long after they have crossed the finish line for the last time. The following are examples of many of these life lessons:

- **Patience**, not instant gratification—It takes months and years to

develop a distance runner. Instant success is rare.

"I've learned anything in life worth having comes from patience and hard work." (Greg Behrendt)

- **Hard work**—There are no shortcuts to success. The magnitude of the rewards are proportional to the effort that is put into the sport.

"There may be people who have more talent than you, but there's no excuse for anyone to work harder than you do." (Derek Jeter)

- **Intrinsic rewards**—Unfortunately, many times there is little public recognition given to even the elite performers in cross coun-

try; however, the satisfaction that an athlete receives if he or she is truly passionate is immeasurable. Extrinsic rewards should not be neglected, but they cannot become the primary focus if long-term success is to be achieved in this, the loneliest of sports.

"It wasn't the reward that mattered or the recognition you might harvest. It was your depth of commitment, your quality of service, the product of your devotion—these were the things that counted in a life." (Capt. Scott O'Grady)

- **Responsibility for personal health**—The body is a temple, and you are given only one; therefore it is paramount that you take care of it.



“Those who turn back never reach the summit.” (H. Jackson Brown Jr.)

- **Mental toughness**—Anyone who has ever run cross country understands the mental toughness that is necessary to complete a workout, a race, a season, regardless of success. The carry-over of mental toughness later in life is invaluable in a job, in raising a family, and in dealing with adversity.

“Do you want to win? Then get tough. Mentally tough. It takes more than muscle,

more than sheer determination to get to the top. It takes the mind of a champion.” (Anonymous)

Eating correctly, getting the proper amount of rest, and drinking fluids are important to success in cross country, and they are some of the key ingredients to living a healthy life.

The obesity rate in the 12-19-year-old age group is 20.6%.

- **Not placing first**—Being the very best that you can be, regardless of where you finish, is the goal of every runner. Getting the most out of your ability will lead to success in nearly all your endeavors.

“Strength does not come from winning. Your struggles develop your strengths.” (Arnold Schwarzenegger)

- **Team success**—Cross country is truly a team sport. Without all of the team working together, the team will not succeed. This is also true of anything else in life.

“No man is more important than the team. No coach is more important than the team. If we think that way, all of us, everything that you do, you take into consideration what effect it will have on my team.” (Bo Schembechler)

- **Structure**—Any successful team will have rules and will be well-organized. This will carry over into the personal lives of each team member.

“Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution. Quality represents the choice of many alternatives.” (Willis A. Foster)

- **Finishing a difficult task**—This is one of the most demanding of sports. Long-term success requires the runners to have a vision and to be able to focus on both the present and the future, in practice and in races.

- **Self-discipline**—This trait is the key to success in anything. Our sport requires a great deal of self-discipline. Unlike many other sports, the coach is not always with each athlete, such as when they are doing a long run. OHSAA rules limit the coach to the number of coaching opportunities in the off-season; therefore, the runners must have self-discipline. One of my favorite quotes reflects this life-lesson. “Character is what you do when no one is watching.”

“The only discipline that lasts is self-discipline.” (B. Phillips)

- **Passion**—Having passion for what you do is critical. It will help overcome the “bad day.” When the task has been completed, the

(Continued on page 7348)



From the Mailbox

Former Track Coach editor Kevin McGill is a coach, clinician, a contributor to these pages and other journals, and an unabashed aficionado of the javelin and hammer. His remembrance of javelin master Steve Seymour appeared in TC issue #229.

Dear Ed [Fox, Publisher]

Thanks for getting the [Steve] Seymour piece into issue #229. His daughter is overjoyed. By looking through two enormous scrapbooks [of his] I was able to tell her about the people who knew her father that she had no knowledge of. He had a good connection with Track & Field News from Day One.

Russ [Editor Russ Ebbets] sent me the article while we were in Göteborg, Sweden, on our trip through Scandinavia by Eurail. That was quite a trip, and I am now a huge fan of Eurail. Would do it again!

I have mentioned in some articles that back in 1962, I went to the Library of Congress to get more information on the javelin. The only track book in English was Ken Doherty's book, which I had. There was one other book that seemed to be on the javelin, and this was "Til Topps Med Spydet" by Egil Danielsen, published in 1957, after he won the 1956 Olympics. I decided, at age 16, to copy the info, and I wrote to the publisher in Oslo, Norway. Got a note back. . . send money order, we send you the book. I got the book, bought

a Norwegian grammar book and dictionary, which I still have.

So, I read the grammar book and realized. . . I could read the book by using the dictionary. There is a connection to English. I translated the parts on training, and somehow discovered the "Javelin Club of Great Britain." I sent them my translation and was contacted by

a fellow named Brian Sextion, up in Canada. He invited me up there to speak on the javelin, or more precisely. . . on my translation. My parents were not wealthy by any means, but once my mother read the letter she said, "You are going."

I got up there, stayed with Brian, and did my talk. . . my first clinic!



McGill and statue

Then in 1970, when my son was a newborn, a high school friend visited with a friend from Norway. I told him about the book, and he offered to translate it fully. I gave him the book and never saw it again.

Flash forward to 2003, and I got a trip to Hungary for an incredible hammer conference. At the conference a fellow named Lars Ola Sundt, from Oslo, came up to me and said, "I have a present." He handed me a wrapped edition of the book, reprinted in 1977!

Then earlier this year, Egil posed in front of his statue, which had been moved to the track in Hamar, from the Olympic Hall on the other side of town. My wife decided during the summer, let's go to Scandinavia! "And maybe see the statue," I thought. We landed in Copenhagen and she agreed to

think about going to Hamar, about 90 minutes north of Oslo by train. Thanks to the Norwegian Federation I knew exactly where to go to see the statue.

It was cold and rainy—as you can see—but viewing the statue brought a bit of closure for me, the boy who had translated his book on the javelin. Egil Danielsen had died at age 85 a few months before our trip, but it was a thrill for me to see the statue!

The bus driver to the site and back: "Never heard of him!" The kid at the 7/11 near the parking lot had not heard of him either. But I told them all he was a great javelin champion and they could be proud of him—a true Norwegian hero of the past.

Kevin McGill

XC LIFE LESSONS

Continued from page 7346

sense of accomplishment will be even greater, because you loved what you did.

"Merit begets confidence; confidence begets enthusiasm; enthusiasm conquers the world."
(Walter Cottingham)

"Every person needs to have their moment in the sun, when they raise their arms in victory, knowing that on this day, at this hour, they were at their very best."
(H. Jackson Brown Jr.)

When I hear the statement from an athletic administrator, "But this sport doesn't generate income," I often wonder if those who profess this idea ever stopped to consider the twelve Life Lessons pointed out in this article. If they did, I doubt that would ever repeat those words, because the impact of these lessons on the lives of those who take part in our sport is immeasurable. There is not enough money in the world to buy the life-changing importance of these traits.

Rod O'Donnell has had notable success coaching at the high school and collegiate level since 1970, with stints at Rio Grande College, Marshall University and Kent State—all in Ohio. He is currently the head coach at Parkersburg High School, where his track team won the West Virginia state title in 2014, 49 years after the team's last state championship. He has published more than 70 articles in track and running publications.

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Level 1 Calendar

Jan 17-19	University of Hawaii at Manoa – Honolulu, HI
Jan 17-19	Boise High School – Boise, ID
Jan 18-19	Chabot College – Hayward, CA
Jan 25-26	Pacific Lutheran University – Tacoma, WA
Feb 14-16	Canby High School – Canby, OR
Feb 15-16	Christian Brothers College High School – St. Louis, MO
Feb 15-16	North Central College – Naperville, IL
Feb 22-23	Alhambra High School – Phoenix, AZ
Feb 29-Mar 1	Skyline High School – Ann Arbor, MI
Mar 7-8	Catholic University of America – Washington, DC
Mar 21-22	Villanova University – Philadelphia, PA
June 7-9	Life University – Marietta, GA
June 12-14	Morristown Medical Center – Morristown, NJ
June 21-23	High Point University – High Point, NC
June 27-28	North Central College – Naperville, IL
July 17-19	Johns Hopkins University – Baltimore, MD
July 31-Aug 2	Yale University – New Haven, CT
Oct 2-4	Community College of Philadelphia – Philadelphia, PA
Oct 9-11	Marian University – Indianapolis, IN
Nov 15-17	Life University - Marietta, GA
Nov 21-22	Allen High School – Allen, TX
Dec 11-13	University of South Carolina – Columbia, SC
Dec 11-13	St. John's School – Houston, TX
Dec 18-20	Westerville South High School – Westerville, OH
Dec 21-22	Florida Atlantic University – Boca Raton, FL



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2019 USATF COACHING EDUCATION AWARD WINNERS

Nike Coach of the Year: Lawrence “Boogie” Johnson, California State University Northridge

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

Dr. Joe Vigil Sports Science Award: Andrew Allden, University of South Carolina

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

Ron Buss Service Award: Dave Pavlansky, Boardman Local School System

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

Fred Wilt Coach/Educator of the Year Award: Charles Clinton, USATF Level 2/Emerging Elite Instructor

This award recognizes a coach that has a distinguished record, which includes sustained, exceptional performance. This award will be presented annually to recognize one individual who has exemplified passion and leadership nationally for the promotion of USATF Coaching Education.

Vern Gambetta/Young Professional Award: Dr. David Bellar, University of North Carolina at Charlotte

This award recognizes a young coach in the first 10 years of his/her career that has shown an exceptional level

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

Terry Crawford/Distinguished Female in Coaching Award: Makiba Batten, Western Michigan University

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

Kevin McGill/Legacy Award: Dr. Larry Judge, Ball State University

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

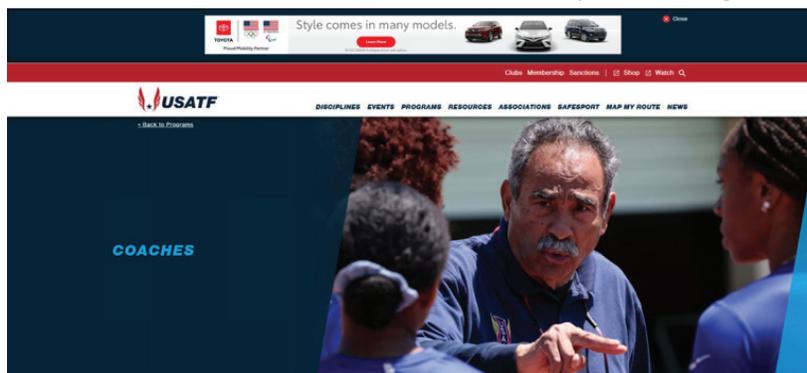
Level 2 Coaches/Rising Star Award: Jacob Cohen, University of Illinois

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

Navigating the New USATF.org – Coach Information

The new and improved USATF website launched in early November and navigation has never been easier. Simply select [Coaches](#) from the [Programs](#) heading and you've arrived at the crossroads for the USATF Coaches Registry, Calendar of Schools, grants, national team selection and more. 2020 programming information continues to be added weekly and a full calendar will be available in early 2020.

Test drive the new look and website today at usatf.org!



**USATF COACHING EDUCATION BY THE NUMBERS –
2019 YEAR IN REVIEW**

Level 1 — 1,800 participants across 43 schools in 27 states

Level 2 — 400 participants across three schools (Queens, NY, Chula Vista, CA, Bradenton, FL)

Level 3 — 51 participants across the disciplines of Sprints/Hurdles and Endurance

Cross Country Specialist Course — 200 participants across two schools (Houston, TX, Colorado Springs, CO)

USATF Campus — 700 courses delivered online

Grants — \$20,000 awarded in coaching education grants and mentorship experiences

Thank you to all who participated in a 2019 course and to the dedication of our USATF certified instructors in delivering coaching education and aiding in the tradition and pursuit of the World's #1 track and field team!



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