Within a Split Second

Inside the moments that create an NCAA champion in the world's oldest sport

Run. Jump. Throw. The quest for competition is innate in the human spirit, and track and field is based on the simplest contests: Who can run the fastest? Jump the longest? Throw the farthest? “All sports, from soccer to football to baseball to basketball, from rugby to wrestling to tennis, have to include higher, farther, faster,” says Curtis Frye, track and field and cross country coach at the University of South Carolina and the U.S. Olympic team’s assistant coach for men’s sprints and hurdles. “If we don’t learn how to throw, how to jump, how to run, then we don’t become an athlete.”

The best track and field athletes in the world – among them, the NCAA’s most accomplished college athletes – will gather this summer at the Olympics in Brazil to compete in contests that have existed for millennia but can end in mere seconds and be decided by millimeters. The planting of a foot, the angle of an arm, the speed of an approach run – each skill was tested and perfected as the road to Rio led through campuses, preparing a select few student-athletes for a moment that could last a lifetime.

Story by Amy Wimmer Schwarb // Photos by Stephen Nowland and Jamie Schwaberow

100 METERS

// WHAT IT IS Starting from blocks, competitors race 100 meters down the track straightaway.

// ORIGINS Ancient Greeks raced this event’s forebear, a “stade” or “stadion,” the root of the word “stadium.”

// MODERN TIMES Part of the modern Olympics since Athens in 1896 and added as a women’s event at the 1928 games in Amsterdam.

// THE TECHNIQUE The best sprinters look as if they are light on their feet; in reality, they are explosive – and in those lightning-fast touches of toe on track, they are propelling their bodies onward, not to mention upward.

// CRITICAL SKILL Speed, of course – but strategy, too.

Sprinters should emerge gradually from their low body angle in the starting blocks to help them thrust forward.

// WATCH FOR THIS Runners tend to reach peak speed at the 50- or 60-meter mark.

“In the blocks, I just close my eyes and tell myself to go out, relax and finish strong.”

Jarrion Lawson // 2016 Division I men’s outdoor 100-meter champion // Graduate student, University of Arkansas, Fayetteville // Pursuing Master of Business Administration
3,000-METER STEEPLECHASE

// WHAT IT IS // From a standing start, runners race 3,000 meters, clearing 28 barriers and seven water jumps along the way.
// ORIGINS // Started in Britain, where men raced from one town’s steeple to the next, jumping fieldstone walls and tiny tributaries. Moved from British byways to the track in the 1879 English Championships. // MODERN TIMES // The modern-day steeplechasers use the barriers as tools, not obstacles, says Chris Doomes, Morehouse College assistant track and field coach and an assistant coach for Nigeria in the 2012 Olympics. Most plant their takeoff foot 5 or 6 feet from the jump, then slow and use the barrier to propel themselves onward. // CRITICAL SKILL // Timing. “You have to gauge your distance from the barrier to push off of it and still be in sync with the rhythm of your stride,” Doomes says. “You see a lot of athletes stop or stutter-step in front of the barrier. That’s lost time.”

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// OFF THE BEATEN TRACK // 2016 Division I champion Mason Ferlic took a splashy tumble at the 2015 championships, but beat the rest of the field by 3 seconds this year.

// HIGH JUMP

“I want to gradually pick up speed and, once I’m over the bar, make sure I lift my knee high enough.”

“Something just flashes into my head: ‘This is the last jump. This one really has to count.’”

// ORIGINS // The Celts originated the sport in the early 1800s.
// MODERN TIMES // 1968 Olympic champ Dick Fosbury originated a style of flipping over the bar belly-side-up, which dazzled even Fosbury. “Sometimes I see movies,” he once said, “and I really wonder how I do it.”

// THE TECHNIQUE // The speed over the penultimate step and its distance from the bar can be the difference between success and failure. // CRITICAL SKILL // “Speed jumpers” need a fast approach; “power jumpers” rely on gymnastic ability.

// ORIGINS // The only jumping event in the ancient Greeks’ pentathlon, it dates to as early as 776 B.C.
// MODERN TIMES // On the Olympic roster since the first modern games in 1896 and added for women in 1948.
// THE TECHNIQUE // The arc of the jump is generated by horizontal velocity – the sprinting speed down the runway – and vertical velocity, represented by the liftoff speed at launch. Executing the jump at a critical angle harnesses the most from both the speed of the run and height of the jump. // CRITICAL SKILL // Speed – at least for most. Former world-record holder Mike Powell has said 90 percent of a jump is in the approach run speed. But this year’s women’s Division I champ, Chanice Porter, excels at the jump. “I put my power in my takeoff,” she says. Porter launches off her left foot and pulls her right knee as high as she can, then extends her legs to wring out a few more centimeters. // CRITICAL SKILL // Speed – at least for most. Former world-record holder Mike Powell has said 90 percent of a jump is in the approach run speed. But this year’s women’s Division I champ, Chanice Porter, excels at the jump. “I put my power in my takeoff,” she says. Porter launches off her left foot and pulls her right knee as high as she can, then extends her legs to wring out a few more centimeters.

// OFF THE BEATEN TRACK // In 2002, sport scientists at Manchester Metropolitan University in England studied why ancient Greeks threw 20-pound weights called halteres during the long jump. The verdict: The weights, frequent finds at archaeological digs near competition sites, pushed jumpers 6 percent farther.
If the Shoe Fits

**DISCUS, SHOT PUT**

**SAUCONY UNLEASH SD**
- Short pattern and smooth. Throwers looking to put a little spin in their step opt for a shoe with a smooth forefoot. Perfect for a glide with your shot put approach? Shoes for gliders have more traction and a flat sole.

**NIKE ZOOM JAVELIN ELITE 2**
- More stability than shoes in javelin footwear. Big, heavy, and substantial. It typically has more spikes in the forefoot than the heel, all for maximum traction in the approach run.

**PUMA BOLT EVOSPEED ELECTRIC V3**
- Lightweight. Barriers sometimes have no heel and a blister plate to aid speed in the straightaway. Better equipment for 200- and 400-meter sprints. Have flexible plates for coming around the bend.

**HIGH JUMP**

**SAUCONY UPLIFT HJ**
- With rearfoot and forefoot spikes, high jump shoes are designed to maximize the plant for the takeoff foot—and some are designed exclusively for jumpers who approach the leap from a particular side.

**DISTANCE RUNNING**

**ADIDAS DISTANCESTAR**
- Designed to be as lightweight as possible with full-length cushioning—because when your body is weighted down, the 10,000-meter, at least your shoes are light and comfy.

**TRIPLE JUMP, POLE VAULT**

**ADIDAS ADIZERO TJ/PV 2**
- Shoes for the pole vault emphasize stability and are built for the all-important planting of the foot before takeoff—because that next step is a doozy.

**MIDDLE DISTANCE AND HURDLES**

**NIKE ZOOM RIVAL D 9**
- Lighter like a sprint spike but with more heel support. A distance shoe, middle-distance spikes strike a happy medium. Hurdlers often favor these too.

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**JAVELIN**

**WHAT IT IS**
- The athlete grasps the spearlike javelin on its corded grip and throws.

**ORIGINS**
- Many field events evolved from skills man once needed for survival, and spear hunting was critical. As a game, it dates to the pentathlon in the ancient Olympics.

**THE TECHNIQUE**
- The thrower isn’t just going for distance, but for optimum angle to take advantage of aerodynamic lift and drag on the apparatus itself.

**CRITICAL SKILL**
- Overall athleticism. “To be a javelin thrower, one needs a good throwing arm; to be a great javelin thrower, one needs to use the entire body,” former United Kingdom Olympian Roald Bradstock has written.

**OFF THE BEATEN TRACK**
- Javelin throwers were in danger of outgrowing their stadium and endangering fans 30 years ago. The international governing body moved the javelin’s center of gravity a few centimeters, reducing distances by 10 percent.

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**DISCUS**

**WHAT IT IS**
- Man throws a 4.4-pound disc that is 8.66 inches in diameter.

**ORIGINS**
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**THE TECHNIQUE**
- Mastering the discus involves harnessing centrifugal force.

**CRITICAL SKILL**
- Well-placed patience. “Discus is what I call hurry-up-and-wait,” says John Smith, assistant track and field coach for throwers at the University of Mississippi. “You’ve got to move fast, but then you’ve got to wait and be patient in the middle. When you pull that trigger too early, you shoot yourself in the foot instead of shooting at the field.”

**WATCH FOR THIS**
- An athlete’s height in the discus isn’t as important as the length of his or her arms. “In discus,” Smith says, “we recruit for wingspan.”

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**If the Shoe Fits**

Cushioned or stripped-down. Pumped-up traction or none at all. Built for rotators or for gliders. Not all track footwear is created equal.
“My plan is get in there – first throw, toss it out, make the final – and then I can go after it.”

Lexi Weeks
2016 Division I women’s outdoor pole vault champion
Freshman, University of Arkansas, Fayetteville
Majoring in chemistry

POLE VAULT

“Every time I get up on the runway, I look up at the bar and I think to myself, ‘You can do this. This is your bar.’”

DeAnna Price
2016 Division I women’s hammer throw champion
Senior, Southern Illinois University at Carbondale
Majoring in accounting

HAMMER THROW

“A metal ball (for men, it weighs 16 pounds; for women, 8) attached to a grip by a steel wire is thrown from inside a 7-foot circle.

Know when to let go. “What you’re doing is you’re creating speed, and your body is an axis to the throw,” Edmondson says. “As the ball starts going faster, it wants to pull you out. You don’t want to go with the ball, and you don’t want to pull back so hard that it pulls the ball out of the orbit. So, it’s a balance.”

King Henry VIII of England was depicted in a drawing from the 16th century throwing a blacksmith’s hammer.

// WHAT IT IS
Pole vaulters sprint along a runway while carrying a lengthy pole, jam it into a recessed box and propel themselves over a bar.

// ORIGINS
Inspired by people using sticks to jump ditches, history’s first pole vault-like competition in the 1600s measured distance, not height.

// MODERN TIMES
An Olympic event for men since 1896 and women since 2000, over the years the pole (at first ash or hickory wood, then iron or steel, now flexible fiberglass) has changed more than the vault.

// THE TECHNIQUE
The speed of the approach run, the precise placement of the pole in the box, the gentle rotation of the pole in the athlete’s grip – all are critical.

“The athletes are trying to stay away from the pole and keep their body long. As the poll slows down in its rotation as it reaches vertical, then the athlete has to speed up their rotation,” says Kansas State University coach Cliff Rovelto, an assistant coach for the 2016 U.S. Olympic men’s track and field team.

// CRITICAL SKILL
Frankly, height. Taller athletes have a better chance of managing longer poles; the longer the pole, the higher the center of mass when it is upright. “How effectively you chose your parents has a lot to do with how you’re going to jump,” Rovelto says.

// OFF THE BEATEN TRACK
A 19th-century vaulter who climbed his pole to gain several feet while it was upright prompted a new rule: The vault is foul if you move your grip above your top hand after your feet leave the ground.

// WHAT IT IS
A metal ball (for men, it weighs 16 pounds; for women, 8) attached to a grip by a steel wire is thrown from inside a 7-foot circle.

// ORIGINS
The rare event that predates even the Greeks, a contest reminiscent of the hammer throw was part of the Tailteann Games nearly 4,000 years ago, when a Celtic warrior threw a chariot wheel on its axle.

// MODERN TIMES
Men have competed in the hammer since the 1900 Olympics, but women did not have a comparable Olympic event until 2000.

// THE TECHNIQUE
A hammer thrower typically takes three or four spins before release.

“Throughout each turn, you are accelerating the ball so it’s at maximum speed and angle when you release it,” says Bonnie Edmondson, assistant men’s and women’s indoor and outdoor track and field coach at Trinity College (Connecticut) and the U.S. Olympic women’s track and field team’s assistant coach for throws.

// CRITICAL SKILL
Knowing when to let go. “What you’re doing is you’re creating speed, and your body is an axis to the throw,” Edmondson says. “As the ball starts going faster, it wants to pull you out. You don’t want to go with the ball, and you don’t want to pull back so hard that it pulls the ball out of the orbit. So, it’s a balance.”

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2016 Division I women’s hammer throw champion
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// WATCH FOR THIS
If an athlete begins to bend at the waist, Edmondson says, the ball is winning the tug-of-war.
# Shot Put

## What It Is
A metal ball (16 pounds for men, 8.8 pounds for women) is put with one hand from a 7-foot-diameter circle lined at the front with a curved toe board.

## Origins
Soldiers in the Middle Ages threw cannonballs for sport, and a similar version first appeared in competition at the Highland Games in 19th-century Scotland.

## Modern Times
For men, the shot put has been an Olympic event since 1896. It was introduced for women in 1948.

## The Technique
The shot is put, not thrown. It should be held at the base of the fingers, not in the palm, and the elbow should stay high at all times. If not, the put can come off the hand more like a baseball pitch, risking injury. “The biggest thing I preach is, when you get to the front, you don’t throw,” says John Smith, assistant track and field coach for throws at the University of Mississippi.

## Critical Skill
No surprise: explosive upper body strength.

## Off the Beaten Track
Shot putters are a popular Google image search. Try this one: “Funny shot put faces.”

## Watch For This
Shot putters can be divided into “gliders” and “spinners.” Gliders begin by facing backward in a crouching position, then kick one leg toward the front while the other glides behind as the body rotates 180 degrees. Spinners tap into torque and momentum to help propel the shot.

“The biggest thing I tell myself to keep my legs working no matter what. If I have a great setup, I can have a great strike.”

**Raven Saunders**  
2016 Division I women’s shot put champion  
Sophomore, University of Mississippi  
Majoring in general studies