How do the hours spent pushing weights and holding planks translate to success? Accomplished college athletes and their coaches explain the workouts that have helped them reach the top – and what lessons athletes young and old can learn from their methods.

By Brian Burnsed
Illustrations by Cheryl Reynon
Progress is painful.
While some movements are essential no matter the sport – think squats, presses and cleans – most require exercise routines specifically tailored to maximize performance in a given skill. Every sport places unique demands on the human body. Divers must have taut cores. Defensive ends, powerful hips. Hockey players, thick thighs that churn like pistons. That means each carefully crafted workout is laden with nuances unfamiliar to most casual gymgoers.

COACH KNOWS BEST: Becky Kimball, director of sport performance and fitness at Wellesley, focuses on building athletes' strength to help divers launch off the board. Sticco-Ivins says the litany of preseason maneuvers in the air Kimball has devised are intended to get her to spring higher, providing her the time to pull off maneuvers in the air Kimball has devised – such as hill runs. “The bar is placed across the clavicle rather than the back of the neck,” which forces the athlete’s core muscles to balance the weight and maintain posture.

The big picture: No matter the sport, core strength is key for balance and stability through any type of movement. Kimball may prescribe extra core work for divers, but an athlete she trains tackles rigorous abdominal exercises.

KEY ABILITY: Core strength
KEY WORKOUT: Pike outs (crunches in tandem with hollow-body holds)
Dajsha Avery
Grand Valley State University • Throws • Major: Computer science and arts for teaching

ACCOMPLISHMENTS
• Seventh-place finish in discus at the 2016 Division II Women’s Outdoor Track and Field Championships.
• Eighth-place finish in shot put at the 2016 Division II Women’s Outdoor Track and Field Championships.

WHY SHE TRAINS: While upper-body strength is important, elite throwers must use their entire bodies to generate distance. No movement in the weight room mimics the forces applied during a throw like the snatch, which demands that the legs, core and upper body work in concert to move the bar overhead in one motion. “You feel it throughout the throw,” Avery says. “I can hit it at the finish a lot harder than I could before, it makes it feel easier.”

HOW SHE TRAINS: Avery has a powerful lower body. She is a rare student-athlete who relishes squat day. But she admits she needs to improve on upper-body strength and loathes pullups.

COACH KNOWS BEST: Avery doesn’t simply need to be able to push and pull relatively heavy weights. She must move those weights quickly. The speed that the bar moves on a snatch or a press is equally important to how much weight she is moving, says Sean Gurnard, an assistant track and field coach who oversees throws at Grand Valley State. “I think obviously how much weight you do helps, but the speed of it, the tempo (matters),” Gurnard says. “Especially in throwing, because the thing is, you’ve got to be strong to throw. Everyone’s throwing the same thing, so it’s about how well you move that 4 kilogram shot put.”

THE BIG PICTURE: To build enough power to hurl a shot nearly 15 meters requires low-repetition, full-body training that builds size and strength even if it comes at the expense of endurance.

KEY ABILITY: Full body power
KEY WORKOUT: Snatch

Adam Knochenmus
University of Wisconsin-Eau Claire • Ice hockey • Major: Physical and health education

ACCOMPLISHMENTS
• Tied for second in Division III in 2015-16 with 22 goals scored.
• Top 10 in Division III in 2015-16 with 1.41 points per game.

WHY HE TRAINS: Standing only 5 feet 8 inches, Knochenmus relies on speed to weave through larger defenders and score goals, and moving quickly in skates requires considerable leg strength. Knochenmus hones his through squats and a variety of lunges, which simulate his legs’ motion as he skates forward or cuts hard from side to side. “We need all those movements when it comes to hockey,” he says. “You condition yourself to doing workouts explosively, too, which triggers some fast-twitch muscles in your legs that we need to have to be faster and be more explosive and have more power when we skate.”

HOW HE TRAINS: While he focuses on strengthening his legs, Knochenmus prepares his entire body for the pounding it will take during games. “There’s a lot of leg work, not much,” he says. “I just pride myself on being good at just staying on my feet and being as tough as possible, not letting these guys knock me around.”

COACH KNOWS BEST: While a typical shift for Knochenmus may last only 30 to 45 seconds because legs and lungs burn out so quickly on the ice, Wisconsin-Eau Claire head coach Matt Loen relies on his top scorer for minutes at a time in close games. Knochenmus can stay on the ice and remain effective because of how much time he spends strengthening his legs for a game’s most important moments. “You want your horses to be horses,” Loen says. “If they’re gone in the end, they’re not going to be able to play.”

THE BIG PICTURE: Skating alone won’t improve speed and strength on the ice. Squats and lunges burn, but the sport’s best players embrace them.
Tristan Duran
University of Minnesota, Twin Cities • Gymnastics • Major: Business

ACCOMPLISHMENTS
• Ninth place, 2016 National Collegiate Men’s Gymnastics Championships all-around event.
• 2016 all-Big Ten first team.

WHY HE TRAINS: Duran, one of the top all-around gymnasts in the country, is strong throughout his frame, but he excels at events that place a particular strain on his upper body. Think of the parallel bars, high bar and pommel horse — each demands immense grip, wrist and shoulder strength, which he forges through a myriad of complex body-weight presses and holds and a handful of weight training exercises. The most daunting is a parallel bar handstand workout that requires 10 dips, walking on his hands for three lengths of the bar, then holding a handstand for a minute. “I dread it every time,” he says.

HOW HE TRAINS: Gymnasts design their workouts to prepare their muscles for the range of strenuous positions they may face as gravity pulls them out of alignment, which can cause serious harm. Duran says plyometric exercises have improved her ability to play near the rim. “During the offseason I play basketball and do plyometric exercises to improve my explosiveness,” he says. “When I catch a rebound over a guy and just take the ball from him, or I’m jumping higher than a guy, then I’m translating what to do to get out of it.”

COACH KNOWS BEST: A strong core — not just abdominals, but lower back, obliques and glutes — is necessary for any gymnast’s specialty. And adding strength without adding weight is also imperative. “You want to increase the strength-to-weight ratio as much as you can because everything we do is about moving body weight around,” Burns says.

THE BIG PICTURE: Gymnastics is a true test of the body’s defensive player of the year. Finishing among the top 10, 2016 National Collegiate Men’s Gymnastics Championships all-around event.

Brittany Hernandez
University of Colorado, Colorado Springs • Basketball • Major: Criminal Justice

ACCOMPLISHMENTS
• Seventh in Division II in scoring in 2015-16 (20.8 points per game)
• 2015-16 Rocky Mountain Athletic Conference Player of the Year

WHY SHE TRAINS: The 6-foot-1 forward was one of the nation’s top scorers last season and her conference’s defensive player of the year. Finishing strong at the rim and then protecting it all the other end requires serious hops. Hernandez says plyometric exercises have improved her ability to play near the rim. “During the offseason I play basketball and do plyometric exercises to improve my explosiveness,” she says. “When I catch a rebound over a guy and just take the ball from him, or I’m jumping higher than a guy, then I’m translating what to do to get out of it.”

COACH KNOWS BEST: Plyometric exercises are more than just jumping. Learning the correct way to land is key to keeping ankles and knees healthy. Conroy has taught Hernandez and her teammates how to land safely on two feet during drills so muscle memory guides their return to earth after a layup or rebound. “You’re really looking at someone’s landing mechanics. You’re able to see if they’ve got a knee collapse,” Conroy says. “That’s extremely important for injury prevention.”

THE BIG PICTURE: Building strength and stamina through presses, planks, sprints and more is essential, but so is mastering fluidity. Leaping, landing and lateral movement to dodge significant injuries.

Giorgio Cico
Johns Hopkins University • Water Polo • Major: Undeclared

ACCOMPLISHMENTS
• 2015 second team All-American
• 2015 Collegiate Water Polo Association Southern Division Rookie of the Year

WHY HE TRAINS: Cico wouldn’t be a prolific offensive threat if he couldn’t use his leg strength to propel his upper body above the water’s surface when he needs to fire a shot, and the stamina to keep doing it.

HOW HE TRAINS: Cico’s routine is a mix of leg, core and shoulder work out of the pool and endurance-strength exercises in it. Cico swims 3,000 to 4,000 yards at various speeds every practice to build stamina and performs drills designed to build core stability and leg strength. Some example exercises: training water while either tossing a medicine ball to a teammate or hosting a full water cooler jug above his head.

COACH KNOWS BEST: Johns Hopkins coach Ted Brenneman pushes his athletes through repeated sets of 100-yard sprints in the pool during the preseason, hoping to prepare them for the shorter dashes they’ll have to make in games. “We’ll seem a couple thousand yards a day,” he says, with intensity.

THE BIG PICTURE: In short, the sport is exhausting. “One of the keys to our training is getting used to playing tired.” Cico says. “No matter how much you train, water polo will make you tired no matter what.”