THE DRIVE

Story and photos by Ed Moran
Over the course of a 14-year national team career, Bryan Volpenhein raced at the Olympic Games three times. He helped lead the U.S. to its first Olympic gold medal in the men’s eight in 40 years at the 2004 Olympic Games in Athens and finished his career in 2008 with a bronze medal in Beijing.

He knows something about the rowing stroke—what it means to be efficient, when and how to apply power to the oar, and when to let the equipment do some of the work. “It’s that fine line of putting all your power onto the oar during the drive without overpowering the oar,” he said.

Today, Volpenhein teaches the art of that “fine line” to the U.S. men’s team that is looking to return to the podium in Rio this summer. He has been the U.S. men’s coach, primarily of the four that won gold at World Cup I in April, since just after the 2012 Olympic Games in London, where he coached the lightweight men’s four and men’s pair.

In the second in a series of technique articles that address the four distinct, yet completely intertwined, elements of a rowing stroke—the catch, the drive, the finish, and the recovery—Volpenhein, along with Connecticut Boat Club and USRowing junior women’s team coach, Liz Trond, and former collegiate coach, Olympian, and U.S. national team coach Larry Gluckman, lends his knowledge and experience to the discussion of what it takes to execute an effective drive sequence.

What is the definition of an effective drive?

All three coaches agree that it takes suspension, a good legs-back-arms body sequence, and just the right length of oar time in the water to propel the boat forward and achieve acceleration without slowing it down at the finish. Those three points—suspension, sequence, and acceleration—are key in describing an effective drive.

"It’s that fine line of putting all your power onto the oar during the drive without overpowering the oar.

— BRYAN VOLPENHEIN, U.S. MEN’S FOUR COACH
Teaching the Drive

Like anything, teaching is most effective when tailored to the level of the student in the classroom. All three coaches teach basically the same concept. A correct drive is only possible when there is correct entry of the blade into the water. The movement of the drive follows the same path from beginning to end, and that drive is the part of the stroke that moves a boat forward. Trond calls this “advancing the bow ball,” and it is the language she uses to teach her novice athletes. “To advance the bow ball, I teach legs-body-arms,” she said. Trond uses simple drills that break down and focus attention on the distinct portions of the stroke. “We do a lot of blade placement,” she said. “We talk about attaching to the water. Whether it’s catch-place or top-quarter stroke and then legs-to-swing and a full stroke, we spend time breaking down the drive. You need to teach young people what it is supposed to feel like and what it’s not supposed to feel like.”

“When the hands pass the knees, we look for the power rectangle, where the shoulders and the hips are aligned perpendicular, the arms are long, the legs are nearly down, and the wrists are just crossing the knees.”

— Larry Gluckman, U.S. Men’s Quad Coach

“When it’s done right, it looks slow,” said Volpenhein. “The oar is moving with the speed of the boat, and it doesn’t look like you’re going through the water as fast. To me, when it was right, it felt patient. It felt elastic, and it felt like I had time. It also felt easy.”

Gluckman also uses terms that help reinforce the skills his athletes have already learned. His image is a “rectangle” created when the legs-back-arms body sequence is done just right. “The drive is a progression of the largest muscle groups to the smallest muscle groups,” he said. “The strongest muscle groups to the least strong muscle groups. Hips and glutes to lower back, then upper back, and then arms.”

“When the hands pass the knees, we look for the power rectangle. That is where the shoulders and the hips are aligned perpendicular, the arms are long, the legs are nearly down, and the wrists are just crossing the knees. If you look at those four points, under the arms, you will see the form of a rectangle. That, in my mind, says that the athlete is using the body parts in the proper progression.”

Gluckman also watches for poor blade placement and timing at the front end. Rowers who move the seat and body before the blade is locked in bring the oar to the water late and in a forward and downward motion called “rowing it in.” “I look at seat and entry timing as the beginning of the drive,” said Gluckman. “In other words, when the seat reaches its point in the recovery and the blade is in the water, that’s the beginning of the drive. The drive exists all the way until the hands pass the knees.”

What is Suspension?

Suspension is leveraging body weight onto the oar handle and coming slightly up off of the seat to maximize the power on the oar as it comes through the water and moves the boat forward. “You have to feel that you are hanging your body weight on the handle and feel that hang all the way through the mid-drive impulse,” Volpenhein said. “Once you get past the midpoint, you carry the leg drive through into the swing, still hanging the whole time. After that point, it’s just letting the oar do the work, letting the oar follow through, keeping your grip on the water, and keeping that puddle dark all the way through to the finish.”

Trond uses a basic suspension drill when coaching the drive. The athletes take strokes at a low rating, while feeling their weight lift off the seat and onto the oar handle. “In order to be efficient, you have to use what you’ve got,” she said. “I used to hate the stand-up-off-your-seat drill, but we’ve been doing that a lot lately, in terms of a warm-up. We have stern-six row for one minute on the seat, connect and advance the bow ball, and then for 30 seconds at low rating, see if they can connect and then hover off the seat—not stand up, but suspend just enough to slip a piece of paper between their shorts and the seat. Just a tiny slip of paper.”
Now, the legs are on the way down and the rowers will soon begin to swing into the bow while still hanging their weight on the oar handle. From there, the back swing into the bow is completed and the oar handle is brought to the body with the momentum of the oar moving through the water.

The rowers have their oars locked into the water, have begun putting pressure on the oar and connecting their hips to their handles to begin the drive sequence.

Here, body weight is suspended and the rowers are in the power "rectangle" position as described by Larry Gluckman. Notice the bend in the shaft of the oar.

For Gluckman, the most important thing about the drive is utilization of the body.

“We’re making sure not to ignore our body weight and to use it properly, from entry to release,” he said. “The drive has a progression of early legs, opening of the back, and feeling that the weight of the body is on the handle. You can feel it in your fingers. We are always looking for the summation of legs, back, and arms and that the stroke has some continuity to it.”

For Trond, suspension also means using body weight to put pressure on the rigger. In teaching novices, she finds they are worried about making a boat go straight and are reluctant to apply pressure, so she has them row one at a time to try to move the boat to the opposite side of their rigger.

“They’re trying to go back and forth, back and forth, catch to bow, catch to bow, thinking the boat is supposed to go straight,” Trond said. “By letting the younger rowers try and pull the boat around, the boats are going to go a lot faster. In layman’s terms, if you are trying to push the boat to port and the other side is trying to push the boat to starboard, the boat will squirt out straight. And for novice rowers, that’s always sort of a life-changing day on the water—when they stop trying to make the boat go straight and start trying to add pressure against their rigger.”

Acceleration and Length of Stroke

The length of the stroke, the time the oar is in the water and being used to propel a boat forward, is finite. It begins when the blade is in the water at its full extension. It ends when the work is done. Keeping the blade in the water longer and moving the hands past the body only slows forward progression.

Problems occur if “the arms break too soon, if the body opens too soon, or anytime before the swing is done,” said Volpenhein. “You have to hang on it all the way through. Then the arms follow, because the energy in the oar has released and comes through the point where it is just a follow-through. The oar whips through, and your hands hold onto that. After that, it’s the release and getting the blade out of the water.”

Gluckman recently coached the Craftsbury Sculling Center men’s quadruple sculls to a win at the U.S. Olympic and Paralympic Team Trials. Length in the water and acceleration was a pre-event focus.

“One of the things we worked on with the quad was being sure they got out of the water—that the drive wasn’t too long and was actually pushing the boat,” said Gluckman. “The release occurs when the boat and the blade decide it has done its work in the water.”

“I believe, and the numbers seem to support it, that the athlete spends two-thirds of the time out of the water and only one-third in the water. There isn’t anything they should do with the stroke that makes the drive less effective for the amount of time spent out of the water. The drive has to be correct.”

Check out usrow.us/TechVideo for USRowing’s latest technique videos and coaching education tips.