

SW
MAGAZINE

SWIMMING WORLD

JUNE 2018 • VOL. 59 • NO.6 • \$5.95

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Q&A WITH
NBAC's
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SWIM BENCH
TRAINING
PART 2



BEFORE THE
BEEP WITH
MARGO GEER



THE
PROFESSIONAL

AFTER TWO YEARS OF COLLEGE, KATIE LEDECKY, THE WORLD'S GREATEST WOMEN'S SWIMMER, IS TRANSITIONING INTO LIFE AS A PROFESSIONAL

PRESENTED BY THE INTERNATIONAL SWIMMING HALL OF FAME



> Freestyle training (Pictured: Vasa Trainer)

SWIM BENCHES: THE COACHES' FRIEND

This installment is the second in a multi-part series in which *Swimming World* explores the role of swim benches in dedicated training.

BY MICHAEL J. STOTT

Legendary coach Richard Shoulberg's primary training pool at Germantown Academy was a six-lane, 25-yard body of water. "Lane 7," his dry deck area, was reserved for five biokinetic benches, four Vasa SwimErgs, nine Vasa Trainers and nine spin bikes.

"Every day was hard work at Germantown," he once noted. But his attention to dryland detail produced strength gains and injury-free swimmers. "With the machines, we try to mirror a lot of the things we do in the pool," he says.

These days, there are three basic forms of swim benches:

- 1) A basic bench platform to use with tubing (such as Lane Gainer's Halo bench)
- 2) A swim bench whereby the athlete lies on a bench that rolls along an inclined rail as the athlete pulls (or pushes) on straps to make the body go up and down the rail, using gravity as the resistance
- 3) A swimming ergometer in which the swimmer lies on the bench and pulls on paddles connected to cords that drive a fanwheel for resistance.

All three styles offer more than 100 functional exercises and resistance options, including those for starts, turns and push-offs.

Regardless of the configuration and resistance method, the concept of using

swim benches has become a staple for thousands of swim coaches worldwide. Swim benches can be found in nearly every college, university, high school and club team program in the USA and abroad.

From a physiological perspective, it is important to understand the types of training possible with each style in order to use the best tool for the job at hand and avoid unnecessary injury.

For example, with a swim bench on which an athlete pulls himself up a rail against gravity (the second type of bench), he can do isometrics, isotonic (using both concentric and eccentric muscle contractions) and plyometric exercises for upper and lower body muscle groups. Rubber tubing stretch cords can also be utilized to do either isometric or isotonic exercises. The swimming ergometers rely on airbrake resistance, so the exercise is isokinetic.

These distinctions are important and need to be matched with the training or rehab goals the coach or athlete has in mind.

The most universally known swim bench today may be the Vasa Trainer. With it, an athlete pulls the body past the hands using either a pulley cable system that requires the athlete to pull or push a percentage of body weight up the inclined monorail. This bench has 15 incline



[PHOTO PROVIDED BY UNIVERSITY OF VIRGINIA ATHLETICS]

"By manipulating grade, number of rounds and repetitions, a coach can provide considerable stress on the athlete. Done correctly, athletes can transfer strength, power and endurance to the water. Vasa Trainers are excellent tools for building abdominals, testing bodyline and posture. We have a set that involves planks, push-ups and knee drives. The set is done with precision, always valuing body position despite accumulated fatigue."—Tyler Fenwick, associate head coach, University of Virginia

settings to change resistance. More resistance options include tubing cords, weight plates and weight vests. Pulling on the adjustable-length nylon webbing straps connected to the front pull-up bar allows the user to double the load at any incline setting.

Coaches who focus on gaining swim-specific conditioning rather than raw strength “will want swimmers to focus on using a high-elbow catch, fingertips to elbow as a straight blade,” says Vasa Inc. founder Rob Sleamaker. “At the same time, the swimmer needs to maintain a taut bodyline while pulling in order to engage the lats, back and all the muscles used when swimming with correct form. Regardless of the stroke being trained, he advises, “Athletes need to concentrate on using a high-elbow catch and focus on feeling pressure on the forearm and wrist, not the fingertips.”

The two main players in the power metric game are the KayakPro SwimFast Ergometer and the Vasa SwimErg. In pulling water, both “work similarly from a training and physiologic perspective,” says Sleamaker. He suggests that coaches use ergs with accurate, repeatable power meters to compare erg workouts “apples to apples” as well as with times achieved in the pool—especially for pacing and distance racing.

“The ability to train for, and measure sustained power with fixed stroke rate, is key to understanding an athlete’s pace, moment of fatigue and technique response when undergoing fatigue. More swim coaches need to use it this way to gain full benefits,” he says.

“In my experience, coaches use Vasa Trainers or SwimErgs as dedicated training tools for many reasons. Those can be unique to each athlete or to the needs of the dryland program. Some coaches simply do not understand the value of the Power (watts) metrics. Consequently, they just don’t use the power meter as much and do not do progressions and testing with the SwimErg,” says Sleamaker.

THE BENCH IN TRAINING

Tyler Fenwick, associate head coach at the University of Virginia, also used Vasa Trainers in his years at Mission Viejo and the University of Tennessee. He found them essential to teach proper stroke mechanics and movement patterns. His instruction continues to be precise and measured to ensure proper body position, connectivity, catch and movement patterns that allow an athlete to progress at correct and appropriate levels as load levels gradually intensify.

Virginia swimmers who do standard pulls on the Vasa Trainers begin at a low grade to build strength and muscle memory. Examples include:

3 x 15 Pulls on :30

- *Progress number of rounds or pulls weekly or as appropriate*
- *Grade can be increased weekly or as appropriate as long as body position doesn’t deteriorate.*
- *A more advanced step is to flip over on the back, holding the legs in line, doing pulls upside down. “Challenging,” Fenwick says, “but this can be very beneficial. Progress increasing grade, number of repetitions and rounds.”*



[PHOTO BY PETER H. BIRCK]

> Andrew Abruzzo, a Georgia commit and three-time world junior champion last year (400-800-1500 freestyle), has both a Vasa Trainer and SwimErg at home. He repeatedly goes 45 seconds all out, then lunges for three minutes. On other days, he cycles through a swimming ergometer routine, going two minutes at 70 percent effort freestyle, back or fly, then three minutes at 80 percent with the last 30 seconds as fast as possible. Two days out of seven, Abruzzo will do that workout, or something similar, on a stepper or spin bike, wearing a hyperbaric mask.

- *Another variation requiring balance is to rotate to the side, maintaining a 45-degree angle. Hold paddle on the rotated side and practice rounding into a backstroke catch, working toward a pull-stroke pattern. This is good for teaching positioning while allowing the athlete to feel the stroke.*

“By manipulating grade, number of rounds and repetitions, a coach can provide considerable stress on the athlete. Done correctly, athletes can transfer strength, power and endurance to the water,” he says.

“Vasa Trainers are excellent tools for building abdominals, testing bodyline and posture. We have a set that involves planks, push-ups and knee drives. The set is done with precision, always valuing body position despite accumulated fatigue.

“Start with knees on the bench and hands on the bar in the front going into knee drives, maintaining posture and line from the top of the head through the lower back. A beginner may then go to the ground to do a set of push-ups and repeat.

“The advanced version involves holding a plank position with the hands holding the front cross bar, the arms straight and toes on the very top of the rolling bench. The back remains straight with the head in line. Holding the position is challenging. Repeating Vasa plank holds, we go into slow and deliberate push-ups from a plank and then a series of knee drives. We build up to four to five rounds of a :30 plank, 20 push-ups and 20 knee drives. Very intense,” he says.

At Germantown, Shoulberg considered dryland critical, believing that the water did not provide sufficient resistance to build the required strength for the greatness he desired. As a result, his athletes began every morning workout with 28 minutes of a fundamental dryland routine. A master at coaching individuals, Shoulberg continues that orientation now with Andrew Abruzzo, a Georgia commit and three-time world junior champion (400-800-1500 freestyle).

For his morning dryland, Abruzzo, who has both a Vasa Trainer and a SwimErg at home, repeatedly goes 45 seconds all out, then lunges for three minutes. On other days, he cycles through a swimming ergometer routine, going two minutes at 70 percent effort

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SWIMMING ERGOMETERS

“Swimming ergometers are versatile and offer a form of resistance that is realistic to pulling water,” says Sleamaker, “because they use an air fan resistance similar to a rowing machine. Pulling on an air fan erg flywheel is about as close as you can get to a feeling and resistance load going through water,” he says. They come at a price—in the neighborhood of \$2,000—but they are terrific at giving bio-feedback.

Eric Neilsen is head Masters swimming coach at Fort Collins Area Swim Team. He also operates his own consulting business, Train Smart, Swim Fast. He started using Vasa Trainers in the early 1990s and added Vasa SwimErgs in 2006. The latter is essential to coaching his multi-sport clientele. “The Vasa SwimErg is a great diagnostic tool and a way to do pre-practice,” he says. “With it, I can make instantaneous stroke corrections, manipulate limbs and give tactile cues. By emphasizing good body line and biomechanics, I can help athletes move efficiently through the water.

“Triathletes really like the various features. With the erg you can export power data files and see trends allowing users to correlate what they see to reality. It is very important for an athlete to compare rated perceived exertion (RPE) with data because it helps teach pacing and self-awareness. It also offers a lot of focused training in a short amount of time,” he says.

Jack Fabian, former head men’s and women’s coach at Keene State College, is back in New Hampshire after coaching two years in Colorado with USA Paralympics and Asphalt Green in New York City. With just a six-lane pool while at Keene, he introduced Vasa SwimErgs and Vasa Trainers to his swimmers to free lane space to add towers, tethers and another power station. He found the strokes per minute, watt and time metric results on his swimmers extremely instructive.

He also encountered an activation energy/learning curve. “I wanted the swimmers to get comfortable and competitive with the SwimErgs—comfortable in case they had an injury or illness that kept them out of the water,” he says. “I wanted them familiar with the erg on a regular basis in order to lower the ‘activation energy’ required to get them up and going.”

One simple SwimErg set Fabian used on Power days is shown in **Fig. 1 (at right)**. This set was done about a month out from NCAAs. In season, the team had a group of four to six people on two to three ergs, switching off. The examples are for sprinters and distance swimmers that scored and were All-Americans at NCAAs that year. The circuits were just one part of a practice involving power towers, parachutes and tethers. “Usually we did 25-meter sprints on the Vasa ergs on days we worked longer sprints with the power towers (to 25 yards). We did 15-meter sprints on the ergs when we worked shorter power with the towers (to 12.5 yards),” he says.

The results in watts were for Keene’s NCAA Division III top male swimmers. “For comparison, an example for a distance swimmer that was a finalist at conference, but missed making NCAAs, averaged around 20 seconds for his 25-meter erg sprint and generated 140 to 159 watts. Female mid-distance and sprinters who won events at conference went around 22-23s for 25 meters and 85 to 95 watts. We had one female who scored as a sprinter at NCAAs, and she was under 20 seconds for the 25-meter sprint, and generated 145 to 155 watts,” Fabian says.

GERMANTOWN SEGMENT TRAINING

Richard Shoulberg, using either a Vasa Trainer swim bench or SwimErg, introduced his athletes to what he called segment training while he was at Germantown. He would set the bench incline to the highest level as long as the athlete could maintain good technique. He would ask them to pull both hands toward the hip, hold until failure and then release. He would have them do the same pulling to the hip and then past the hip as if releasing water prior to recovery.

“I felt that was good training,” he says. “I have no idea why. The kids that mastered that really swam fast, but it was not a skill they mastered within a week. I felt the exercise worked the recovery muscle groups probably better than anything we did. When I see swimmers shorten their recovery, they feel faster, but are really increasing number of stroke cycles and going slower.” ❖

Another set with combined ergs and towers is shown in **Fig. 2 (below)**.

“This was just one part of the practice, but helped us to split up groups and add some variety. We did keep track of stroke rates at one point to make sure swimmers were trying to simulate their race paces.”

ANOTHER BENEFIT

Shoulberg also used swim bench and erg time to reconnect with his athletes and monitor training response. “It is a very important time—” he says, “maybe the most important time I coach.” ❖

FIGURE 1

Set 1	2/19/13	Example Results	Time	Watts
2 rounds	3 x 25m erg sprints 4 x 25 yard dive sprint	Sprinters	16.8-18s/25m 10.8-11.6/25yd	290-330
		Distance	17.5-18.5/25m 10.9-11.4/25yd	210-240
Record watts and times for erg sprints				

FIGURE 2

Vasa and Towers				
1x	2 x 25 on 1:00 Vasa timed 25 meters		SP3	4:00
	1 x 25 on 2:00 25 sprint no breath		SP3	4:00
	4 x 25 on 1:30 25 pool tower sprints		SP3	4:00

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