

THE MAN WHO **MAKES** THE SCIENCE

Sokolovas Helps Swimmers Reach for Perfection

By Raena Alexis Latina



Genadijus Sokolovas grew up in Kaunas, Lithuania, and ultimately became one of U.S. Olympic swimming's most valuable behind-the-scenes experts.

Recognized today as one of the most knowledgeable swimming researchers in the world, Sokolovas recently resigned from his job at USA Swimming, where he had been sports science director since 2000, to create a new company, Global Sport Technology Inc., which offers technologies and services similar to those this respected physiologist developed at the Olympic facility in Colorado Springs.

In his role at USA Swimming, Sokolovas was an integral part of the training staff for Athens and Beijing. He has worked

with swimming's elite, including Michael Phelps, Natalie Coughlin and veteran Olympi-

van and U.S. Masters swimmer Dara Torres. During his eight years with the Colorado-based organization, Sokolovas developed nearly a dozen unique methods for testing athletes and helping them maximize their performance.

"I was always interested in training," Sokolovas recalls. "I questioned, 'what is the optimal design and duration of the training season?'"

Sokolovas fell in love with swimming when he was 6, and says his love for aquatic sport carried him through his youth. He swam in high school, and at the Lithuanian Academy of

Physical Education, where he earned an undergraduate degree in physical education and sport in 1983. He also competed in modern pentathlon. As a swimmer, his favorite stroke was freestyle.

"I was more of a middle distance swimmer, like the 200," he says.

At the university, Sokolovas developed a keen interest in exercise physiology. His early work on that subject examined land and water power among swimmers and pentathletes. He developed ways to test these athletes so they could optimize their performances.

Sokolovas continued his studies while earning his doctorate from the Russian Academy of Physical Education in Moscow, where he focused on developing mathematical models for swimming. He used physiological, biochemical and pedagogical testing programs to assess adaptation in swimming to different workloads, and also developed a computer training design based on changes in an athlete's working capacity.

After Moscow, Sokolovas returned to Lithuania, where he became head of the swimming department at his undergraduate school. He continued to develop and implement complex testing programs for competitive swimmers, examining how swimmers adapt to different workloads during a competitive season. He also designed computer training programs for swimming, taught graduate and undergraduate courses, and coached the swim team.

In the late 1990s, Sokolovas began visiting the United States, where he sometimes had an opportunity to work with Stanford swim coach Richard Quick.

In 2000, after nearly 15 years on the faculty and conducting research in Lithuania, Sokolovas moved to Colorado Springs to join USA Swimming. Accompanying him were

his wife, Birute, and his daughter, Justine. Sokolovas and his wife met while he was a student at the university; she is actually from the same town in Lithuania. Justine, now 21, is studying pre-med courses at the University of Colorado.

At USA Swimming, Sokolovas worked intimately with swimmers on the National and Olympic teams. While working with individual athletes, he has developed new methods of physiology testing, and software for coaches to use in training their swimmers. To support these methods and technologies, Sokolovas also built advanced training and research databases for coaches to access. Studying long-term adaptation of swimmers led him to create computer software for analyzing training data.

Much of his research is based on examining the athlete's adaptation in swimming, and he often applied his results to training programs for elite athletes based on their prior training, age, gender, duration of their season, and maximum weekly target yardage. Olympians benefited greatly from his input.

"It was a great Olympics," Sokolovas says about the Beijing Games. "Our athletes performed really well, especially Michael Phelps. And it is wonderful to see how swimming is so popular around the world. So many countries are winning medals. It is so competitive. It's wonderful. Even [times that were] winning medals in Athens didn't guarantee that the athletes would make the finals in Beijing."

Asked about the impact of the controversial "techno suits" on competitive swimming, Sokolovas laughs a bit at all the media attention. "Suits help a little, but not as much as people want to think," he says. "We use so many tools to evaluate technique, which are much more important."

One of these evaluation tools is the Swim Power Test,

which Sokolovas helped develop at USA Swimming. This test instantaneously records the swimmer's velocity and force, taking measurements at 60 times a second.

"We can tell if the left arm is more efficient than the right; if there is and what is the weak phase of the stroke; if there is a deceleration in breathing," he notes. "We can tell where the problem is ... for example, in the breath cycle, there is the initiation during inhalation and return the head back to the water. Even at the smallest stages, we can make correction in technique to improve performances."

Sokolovas also works on improving training and methodology by comparing an athlete's various swimming performances.

"There is a 'cost' of performance in relation to [one's] history of performances," he says. "We look at things such as, are they recovering faster? We evaluate all stages of conditioning during the training season."

Working so closely with the Olympic team and evaluating minute elements of their training gives Sokolovas special insight into unique qualities that might not be readily apparent to the public, even when we think we "know" a swimmer through what seems like a barrage of media coverage. As with the media "hoopla" over fast swim suits, Sokolovas also commented on much of the attention that surrounded Dara Torres – particularly, naysayers who suggested her age was too great of a detriment to be an Olympic-caliber swimmer.

"I've known Dara for years," he says. "When she came back [to the sport], I was here for 10 days when she came in for testing with some other swimmers from Stanford. Her strength on the land and in the water ... she was the strongest female on land, and even stronger than some of the men on the Olympic team, especially

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GENADIJUS SOKOLOVAS

(facing page) rigs up Olympic medalist **NATALIE COUGHLIN** with equipment to test her performance in the pool at the 2008 Olympics in Beijing.



Sokolovas with all-time record Olympic medalist **MICHAEL PHELPS** (above) at the 2008 Olympics in Beijing. Sokolovas celebrates Christmas (left) with his wife, **BIRUTE**, and his daughter, **JUSTINA**.



Photos courtesy of Genadijus Sokolovas.

some of the middle distance swimmers. She never stopped exercising. Back then in 2000, she said she was too old ... but in '07 she said, 'I'm back.' I tested her strength and technique. She's as strong as ever and even leaner. She's very powerful, and is always exercising. Age is really not a deterrent. Swimming, and exercise in general, mean better recovery. Dara's performances are incredible. She's a great athlete."

When testing and training Torres, Sokolovas notes that they examined "the small things" to change and improve. In October 2007, they were hoping to drop .3 seconds from her time on the 50 free-style. They examined Torres's breathing pattern, and noted that she had broken the American record by breathing every three strokes. But Sokolovas' further testing showed that Torres was more efficient at breathing only on the right.

"So, we trained and tested her breathing only on the right, every four strokes," he

says. "Initially, she struggled. There's less oxygen to the muscles. But with training, she became more comfortable." This adjustment helped drop about .15 seconds in her race.

Then, Sokolovas worked with Torres to strengthen her underwater kick. "She had a short breakout with one big fly kick," he says. "After analyzing it, we saw that the fly kick decreased in velocity versus smaller kicks – two to three small, quick kicks allowed her to keep her velocity." The result of this adjustment was another .18 seconds in pre-Olympic camp (24.07). "And in Beijing," he continues, "... to be just .01 behind the winner ... it's amazing!"

In his new business, Sokolovas notes that techniques developed for elite athletes often can benefit anyone who wants improve. He notes that one of Torres' strengths was goal setting. "First it was make the (Olympic) team," he recalls. "Then it was win a medal. Then it was win. We worked with Coach Michael Lobert for about 12-18 months of work. It wasn't easy, but it's about goals, and any athlete can set goals."

Sokolovas finished his service with USA Swimming August 31, retiring after the Beijing Olympics. In a statement to *Swimming World*, USA Swimming Executive Director Chuck Wielgus said, "Genadijus Sokolovas has offered valuable consultation and support to our nation's athletes and coaches, for which we are very grateful for his dedicated service ... He has been a key contributor in our tradition of success."

Through Global Sport Technology Inc., Sokolovas plans to make his testing techniques and software available to even more swimmers. Particularly, while his programs were originally for coaches only, his new software will also work for Masters swimmers.

Sokolovas laughs when he

considers the many elements of science that have surprised him over the years. Adaptation, technique and physiology spring to mind.

"Studying stress has been interesting," he says. "Stress is so much smaller in the water. Everybody should swim in my opinion. Swimming makes it easier to recover. You can maintain your conditioning. Physiological stress is much higher in running. There's higher lactate, higher blood pressure, higher stress, slower recovery ... water is better than land, especially as we age. The rate of adaptation is smaller and slower for Masters. Therefore, training should be different. My Swim Power Machine (see sidebar) can make really big changes in mistakes. Even elite swimmers have mistakes. There is no perfect swimmer."

Sokolovas recalls receiving an email from Dara Torres.

"She was upset and said

something like, 'Everyone tells me my stroke is good, and one crazy scientist tells me I'm doing it wrong,'" he laughs. "But if a stroke was perfect, there wouldn't be anything to improve."

Sokolovas hopes to set up regional centers for his testing, partnering with other organizations such as universities in both the United States and in Europe. Several Masters swimmers have already been able to take advantage of Sokolovas' training and evaluation at the Olympic center camp in Colorado Springs.

Kris Houchens, a coach of YMCA Indy SwimFit in Indianapolis, attended USMS/USA Swimming High Altitude Training Camp with Sokolovas as an assistant coach in 2002 and as head coach in 2003.

"I was a member of the USMS Coaches Committee," Houchens says. "They had asked me if I was interested, and I said, 'Yes!'"

The camp was open to any Masters swimmer, but people had to apply to get the only 12 spots available, which were determined by a committee. Attendees received testing like they do for the Olympic Swimmers. Factors like Top 10 and competitions were weighed heavily.

"The top athletes I had the years I was there included Sally Dillon, Barb Gundred, Joanne Reiersen, Ed Cazalet, Laura Val, Kurt Dickson and others," Houchens recalls.

Houchens says topics and testing included flexibility, stroke seminars, training log and acclimation, workouts and filming, blood draws, lactate/heart rate profile, psychology,

goal setting, film review, nutrition, flume orientation, biomechanics, filming turns, core body strength, passive drag testing, race strategies, injury prevention, data feedback and video review.

"Genadius is just awesome," Houchens enthuses. "He has a gift for breaking down very complicated information that goes with physiology and putting it in layman's terms. He also loves what he does, and it shows in the way he approaches his field and how he relates to others."

Masters All-American Nadine Day was one of 12 Masters swimmers selected to attend a USMS camp in Colorado Springs in 2004. The camp included six

Services for Swimmers

Anyone can now benefit from Sokolovas' specialized testing services and expertise available from Global Sport Technology Inc. Sokolovas may be reached at (719) 321-6975 or gsokolovas@gmail.com.



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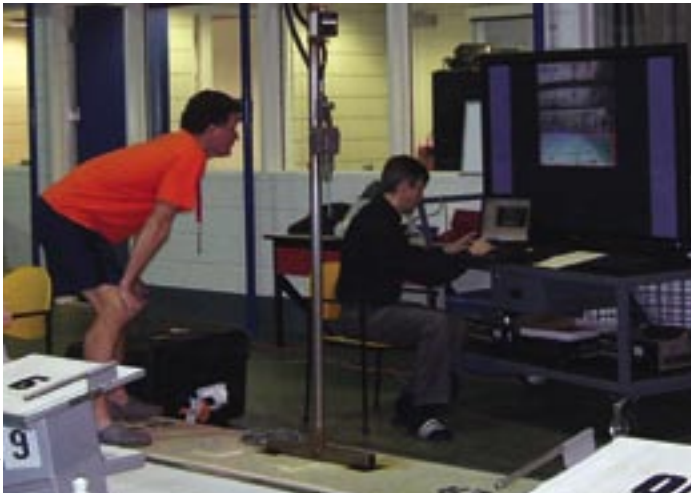


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SOKOLOVAS and an assistant prepare the Swim Power Test apparatus for monitoring a swimmer. Sokolovas, who developed the test for Olympic swimmers, now offers the same testing to all swimmers through his new company, Global Sport Technology Inc.

women and six men. Scott Williams, from the Olympic Club, and Mike Collins from NOVA, were coaches.

“Nancy Ridout was the USMS liaison,” Day recalls. “She was like our mother.”

The group also included a

physiologist and a physical therapist. Olympian Rowdy Gaines was the special guest. Day’s experiences included completing a nutrition paper prior to the camp to keep track of what she ate. Attendees received feedback on diet. They

also had blood work done in the lab. Other physical testing included land- and water-based strength testing, lactate testing, flexibility testing and video stroke analysis.

“I found out that I wasn’t very strong on land,” Day says. “I already knew this, since I do not do any land-based training, and I am not strong with an isolated pull or kick; but I am very good with combining the two components together to swim fast. I needed to do more anaerobic training and kicking, as well as eat better.”

Day says she enjoyed working with Sokolovas.

“He has a passion about swimming and knowledge,” she says. “We talked a lot about random aspects of swimming from body types, kick based swimmers, starts, turns; stroke techniques dependent on the type of swimmer focusing on their physiological strengths; utilizing lactate test results in recovery and

modifications for training. I really enjoyed talking with him and he was open to talking.”

Both Houchens and Day say they are happy that this type of testing may become more widely available to Masters swimmers through Sokolovas’ new business.

“To be able to collect valuable information on athletes as they age would be a wonderful insight for the general Masters swimming public,” Houchens says.

While he continues his work, Sokolovas also stays active in other ways. “I wish to swim a little bit more, but ... who has the time!” he laughs. Sokolovas does stay active by running, and also takes fencing lessons at the Olympic Training Center in Colorado Springs. “I really like fencing. I call it a ‘physical chess game.’ You really have to anticipate what your opponent is doing. And I enjoy skiing here in Colorado, but last year I only skied for two days ... hopefully more this year!” <<<

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