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SWIMMING TECHNIQUE

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ON THE COVER: BRUCE GEMMELL of Nation's Capital Swim Club
Photo by: Taylor Brien

In Swimming Technique Magazine, we are dedicated bringing you the best information in the areas we feel are vital to swimming and coaching better. We've broken down our content in seven categories, and every issue we will do our best to give info in each. The categories are as follows:

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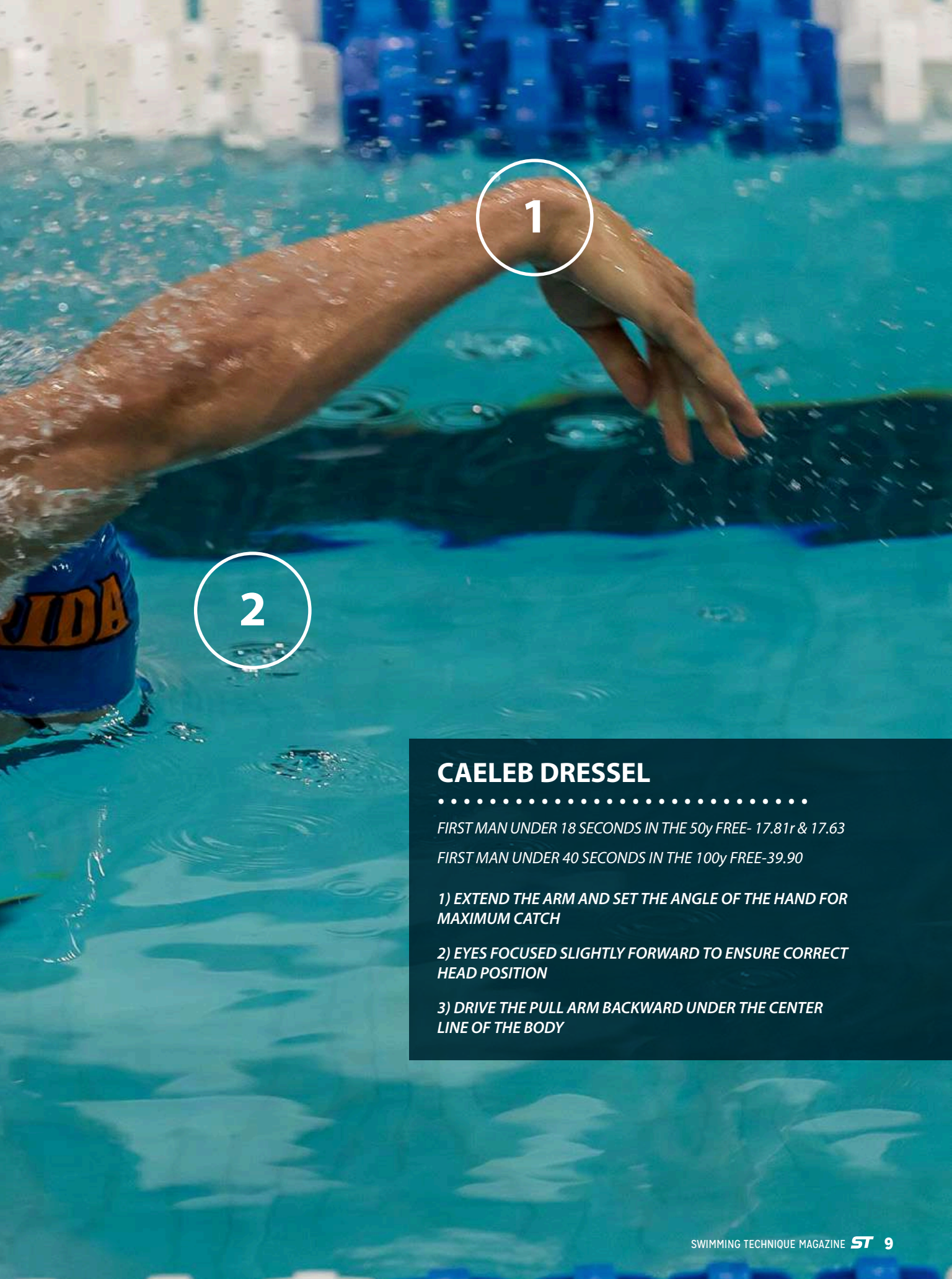


- ③ **outside isolation**
Using the edge on the outside (grey on left, yellow on right) allows swimmers to isolate and engage the triceps and trapezius muscles

TECHNIQUE TIP

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3



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CHANGE A LIFE...BECOME A COACH; CHANGE THE NATION... COACH THE COACHES

>>> MICHIGAN COACH MIKE BOTTOM

by Wayne Goldsmith

Coaching is one of the most wonderfully inspiring professions in the world. What other profession actually makes you feel better, more energized, more invigorated, more positive and happier by doing it? How many people can actually say that their job improves their life, and that going to work is the highlight of their day?

Coaching is an amazing and rewarding way to spend your life. Why?

- *You help kids to swim faster. That's cool.*
- *You work with young athletes to improve their swimming technique and racing skills. That's great.*
- *But there's one reason above all that makes coaching the enjoyable experience it is: **you get the opportunity to change lives.***

In no other profession—apart, perhaps, from teaching school—do human beings have the opportunity to make an impact on the lives of young people...and in doing so, inspire them to dream more, imagine larger and to achieve greater things than they ever thought possible.

Coaches can—and do—make a difference to the lives of every athlete with whom they work. And the great ones change the sport...and the nation.

CHANGING THE NATION THROUGH GREAT COACHING: THE ARITHMETIC OF THE ART OF COACHING

Imagine for a moment that one great coach—over the course of a 20-year career—inspires the hearts and minds of 1,000

young swimmers.

That's 1,000 swimmers who have learned...

- *important life lessons;*
- *the “value of values” such as honesty, integrity, humility, courage, respect, discipline, hard work;*
- *to set and achieve goals;*
- *to overcome adversity and setbacks; and*
- *all about the importance of teamwork.*

Then, consider for a moment that just 10 of those 1,000 swimmers become a coach—or a teacher—themselves. And in turn...they, too, inspire the hearts and minds of 1,000 swimmers.

That one “original” coach—the one who inspired the first group of 1,000 swimmers—has directly or indirectly influenced the attitudes and behaviors of 10,000 swimmers!

That's how great coaching works: IT MAGNIFIES MAGNIFICENCE!

A single outstanding coach—a coach who practices the “art” of coaching, who understands their role in inspiring and changing young athletes—can change a city! And in every city...in every state...in every nation, there are remarkable coaches who continue to change the lives of every swimmer they coach.

Just a few committed, dedicated, passionate coaches can change a nation!

COACHING IS ALL ABOUT CHANGING LIVES NOT JUST MAKING KIDS SWIM LAPS!

Swimming coaching occasionally gets a bad “rap.” Most of it is due to swimmers, parents, the public—and even coaches themselves—misunderstanding the purpose of coaching.

There’s a difference between “training” and “coaching.”

A coach who delivers a “training” program is usually bogged down with the “what” of coaching. They constantly reflect on questions such as:

- “What’s the right number of laps to swim?”
- “What’s the best drill to do for backstroke?”
- “What’s the right pace to swim these 100s?”

A “trainer” is focused on how much, how fast, how often—and all the physical aspects of the sport of swimming.

But coaching is very different. A coach...

- works with the heart...but isn’t concerned with heart rates.
- is more focused on learning and life lessons than on laps.
- works with the athletes to help them understand that it’s not what they do that matters—it’s *how they do it*.

A coach understands that every day—every workout—is an opportunity to make a difference to the life of every athlete on their team.

Put simply...**coaching is change.**

Ostensibly, one goes to a football coach to change something about the way he trains for or plays football. An athlete may seek out a baseball coach to help make some changes to his hitting or catching or pitching.

Swimmers look for a swimming coach to change something about their swimming—for example, to change their dives, starts, turns, finishes, technique, speed, power, endurance, etc.

Coaching is change. And great coaches are “Masters of Change.”

They understand how to inspire change in athletes, and they know the impact that the right change can make on the athletes’ ability to train and compete.



However, there’s a difference between changing someTHING and changing someONE.

THE ONE THING GREAT COACHES UNDERSTAND THAT MOST COACHES DON’T

Most swimming coaches are obsessed with the “what” of coaching—i.e., the science of the sport, usually expressed in terms of **volume** (how many laps), **intensity** (how fast to swim those laps) and **frequency** (how often to swim those laps).

Sports science is not an exact science! There is no magical, miracle method or secret ingredient or formula combination of volume, intensity and frequency that works for all swimmers.

However, most coaches keep looking for it. You see them at conferences and clinics, copying down the sets and repeats and programs of the great coaches. Or you hear them discussing their latest training set and their new workout—and always in terms of the physical effect this has on their athletes.

What most coaches don’t “get” is that while their obsession with training sets, workouts and drills might make them better *trainers*, it won’t make them better *coaches*.

The one thing great coaches understand—the one thing that defines their greatness—is that the real “art” of coaching lies in changing the hearts and minds of their athletes so that regardless of the workout CONTENT—i.e., the volume, intensity and frequency of the laps—their swimmers complete their training with the INTENT with which it was written.

There are four possible relationships between the content of a workout (sets, repeats, etc.) and the intent (the way the swimmer completes the workout):

CONTINUED >>>



[PHOTO COURTESY: KRISTIN WALKER]

>>> WES NEWMAN OF CORNELL

- Great content, poor intent
- Great content, great intent
- Poor content, poor intent
- Poor content, great intent

It doesn't matter how brilliantly and scientifically the workout is designed—success comes down to how each and every swimmer on your team **CHOOSES** to swim that workout. A perfectly designed workout that is completed poorly does not deliver great results.

Imagine for a moment that you're a coach and you're given two years of workouts from the world's leading swimming program—i.e., two years of swimming program “CONTENT.”

You think you've just won the lottery! So, you immediately implement the new program and assume every swimmer on your team will become brilliant because you've got “the secret” to success.

After a week...nothing! No world-class times, no national records...nothing! A month later...still not much change. Three months...and you've completely abandoned the world's leading swimming program and gone back to your own program.

You can't understand it! Your swimmers are following the greatest swimming program in the world, and they're not getting any better. How can that be?

Because the two most important things in your program haven't changed.

- YOU haven't changed. You might be delivering a more scientifically precise program, but your coaching hasn't improved.
- And...you haven't coached your team to complete the workouts the way they were written—i.e., to swim them with the **INTENT** with which they were written.

Workouts themselves do not make the difference. YOU— your coaching and your impact and influence on your swimmers—**THAT'S THE DIFFERENCE.** That's why coaching is so important and why the quality of coaching affects every level of swimming in a club, a city and even across a nation.

SUMMARY

1. Coaches change lives. Coaches inspire change through emotional connection. They inspire young athletes to achieve remarkable things: things that, perhaps, the athletes themselves had never dreamed possible. Being a coach is the most wonderful, amazing, motivating, energizing profession in the world!

2. Great coaches not only can inspire young athletes to swim fast, but also, in the process, teach them life lessons. Their athletes can learn how to set and achieve goals, how to manage time and commitments, how to work as part of a team, and they can understand the importance of developing a strong work ethic. Great coaches can also help their athletes develop values such as honesty, integrity, humility, respect, commitment, dedication and resilience. Coaches really do change lives.

3. Great coaches—through their capacity to inspire athletes—can have a remarkable impact on the sport. They can truly change the sport...and the nation. ◀

About the Author:

Wayne Goldsmith has worked with swimmers, coaches, swimming clubs, swimming parents, sports scientists and swimming organizations all over the world for more than 25 years. He served as managing editor of *Swimming Technique Magazine* in 2016-17 and has contributed to *Swimming World Magazine* for 17 years. He is one of the world's leading experts in elite-level swimming and high-performance sport. Be sure to check out Goldsmith's websites at www.wgaquatics.com and www.wgcoaching.com.

[1] BOX JUMP

Standing in front of a box that is 10 to 30 inches high—with feet shoulder-width apart—squat down and then jump onto the top of the box. Step or hop off, and repeat.



[2] TRX SQUAT JUMP

Attach a TRX or other strap system about 8 feet high. With feet shoulder-width apart, drop into a squat while holding onto the handles. Launch yourself upward while continuing to hold the handles.



[3] SINGLE-LEG DEADLIFT

Standing on one leg while holding a weight in your opposite hand, perform a deadlift movement: bend forward at the waist, slightly bend the forward knee and lower the dumbbell to the floor while lifting up your opposite leg. Complete all reps on the same leg, then alternate.



[4] DUMBBELL SQUAT JUMP

While holding a pair of dumbbells at your shoulders, drop into a squat, then explode upward and raise the dumbbells overhead. Repeat all reps.



DRYSIDE TRAINING:

T/R

BUILDING STRONGER LEGS

BY J.R. ROSANIA • PHOTOS BY EMMI BRYTOWSKI • DEMONSTRATED BY NORIKO INADA

Looking for better starts, turns and race finishes? Well, look no further than better leg strength and power. Stronger legs will get you off the walls faster and with more speed and distance. Stronger legs will also enable you to get greater push off the blocks and more speed underwater and during breakouts. You will also benefit late in a race from stronger legs with less fade and more kick power.

Here are four great leg-strengthening exercises. Perform each exercise two to three times a week. Start with one set of 12 reps the first week. Progress to two sets of 12 reps for two weeks. After three weeks, complete three sets of 10 reps. Never max out with weight.

Discontinue the exercises one to two weeks prior to a taper competition.

Good luck, and enjoy your newfound leg strength. ◀



ABOUT THE AUTHOR:

J.R. Rosania, B.S., exercise science, is one of the nation's top performance enhancement coaches. He is the owner and CEO of Healthplex, LLC, and has finished the Ironman Triathlon 18 times. He also serves as Swimming World Magazine's fitness trainer and was named one of "America's Top Trainers" by Men's Journal and Vogue magazines. Check out Rosania's website at www.jrhealthplex.net.

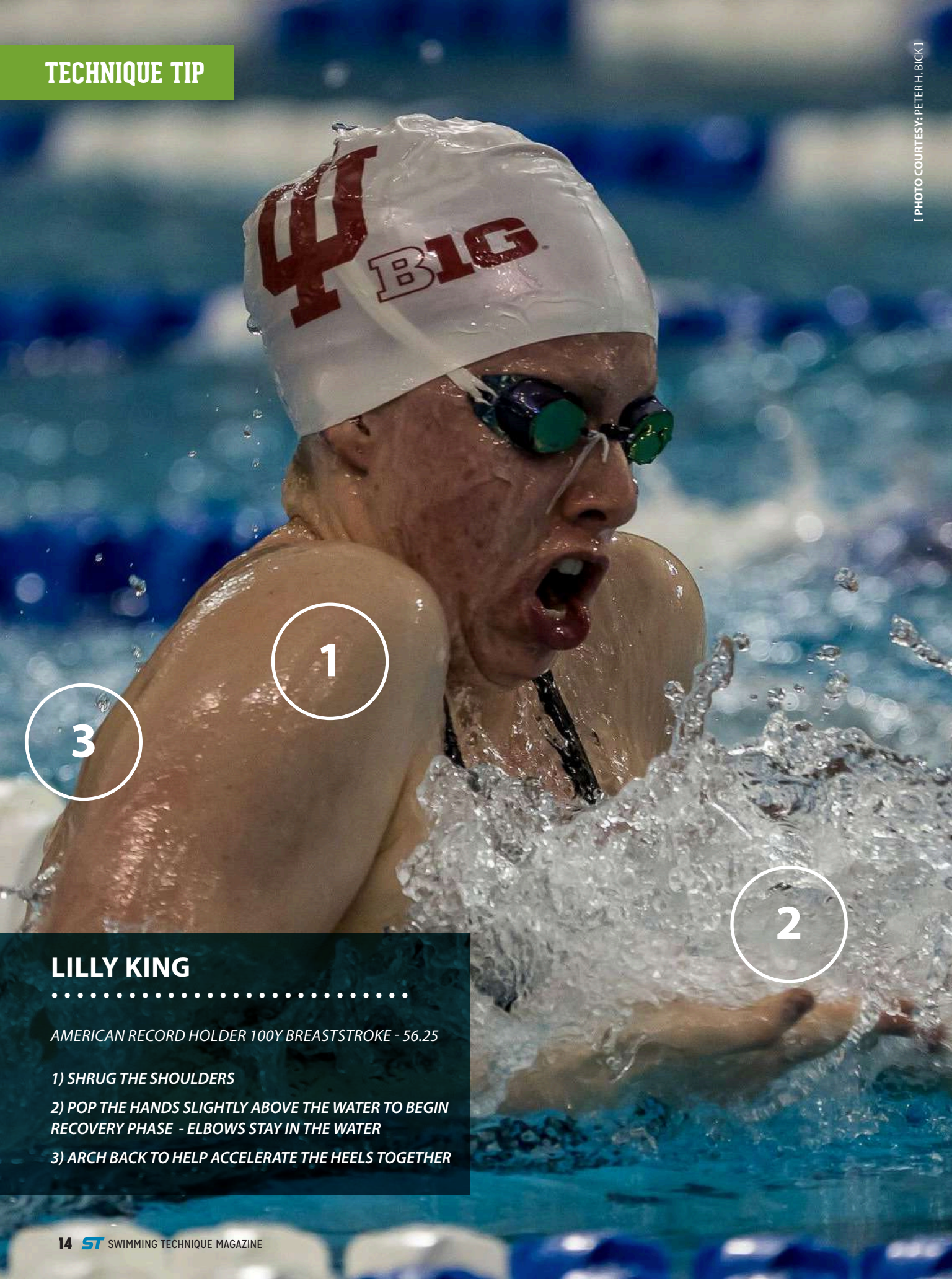


ABOUT THE ATHLETE:

Noriko Inada, 39, swam for Japan at the 1992, 2000 and 2004 Olympics. She now swims Masters for Phoenix Swim Club, and owns Masters world records in the women's 25-29, 30-34 and 35-39 age groups.

NOTICE

All swimming and dryland training and instruction should be performed under the supervision of a qualified coach or instructor, and in circumstances that ensure the safety of participants.



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HEART RATE RESPONSE DURING REPETITION SWIMMING

by Curtis S. Goss, Joel T. Greenshields, Chris L. Brammer, Kosuke Kojima, Brian V. Wright and Joel M. Stager

Since the mid- to late-1960s, the majority of pool time spent during competitive swim training can be described as some variation of “interval training.” Interval training is commonly characterized as discrete, prescribed exercise bouts that are discontinuous and intermittent in nature. The variables generally include the *distance* (D) of each discrete bout within a set of bouts, the *intensity* of each bout (I), the total number of *repetitions* (R), and the prescribed repeat *time* (T), hence the acronym, “D.I.R.T.” (Counsilman, 1968).

In today’s modern training paradigm, coaches commonly use heart rate (HR) “zones” to communicate and prescribe the intensity at which interval training sets are to be performed by swimmers. The use of training zones appears to have been popularized by Jon Urbanchek with colored HR zones he implemented at the University of Michigan beginning in the 1980s. The HR zone paradigm used by Urbanchek is shown in **Table 1**.

It is important to note that today, this is now only one of many different “zone” paradigms used across the world. The underlying assumptions that support the use of these zones are that a certain HR zone directly corresponds to a particular biochemical energy system (Riewald & Rodeo, 2015), and that the physiological response to work performed within these zones does not significantly differ among individuals.

The purpose of this study was twofold:

- To describe the heart rate response of competitive swimmers to a prolonged, submaximal, interval training set;
- To compare individual responses to this set to gauge the inherent individual variability that exists among swimmers.

Table 1. Example of HR zone paradigm (adapted from Urbanchek, 2003)

Energy Zone	HR (bpm)	% of Max HR
White	144 - 156	72-28
Pink	150 - 156	75-78
Red	162 - 174	81-87
Blue	168 - 174	84-87
Purple	180+	90+
Green	Max	100

METHODS

Twelve collegiate swimmers were instructed to complete 60 repetitions of 100 yards freestyle at their fastest sustainable pace, taking approximately 10 seconds of rest between each repetition. This is similar to the procedure described by Costill, et al. (1988) as a means to describe the effects of freestyle swimming repetition training upon muscle glycogen depletion. The trials were completed in a temperature-controlled pool (26 C) and subjects rehydrated with water as desired. Each swimmer was outfitted with a commercially available cardio-tachometer (Actiheart, CamNtech Ltd., United Kingdom) that monitored HR throughout the trial. HR was collected in 15-second epoch lengths. Time to complete each repetition was also recorded.

Data Analysis

Mean HR, mean completion time and percent of best time were calculated for each subject and for the entire group. The range of these values was also calculated. Percent of best time was calculated using the average repetition time and the best 100 yard freestyle time for each swimmer. Only repetitions 6-55 were used in order to eliminate any effect of “fast-start” and “fast-finish” pacing.

RESULTS

For repetitions 6-55, the mean \pm SD value for HR was 167.8

± 10.8 beats per minute (bpm); for time, 68.7 ± 4.1 seconds; and for percent of best time, 71.2 ± 4.6 percent. According to Urbanchek's color zones, one swimmer was in the white zone, one swimmer was in the white/pink zone, three swimmers were in between the pink and red zones, no swimmer was in the red zone, five swimmers swam in the red/blue zone and two swimmers swam in the purple zone. **Table 2** shows the mean values for each subject and the range of these mean values.

CONCLUSIONS

The present study is the first to examine swimmers' heart rates during prolonged, repetition training. Anecdotal evidence suggests that the protocol in the present study is not atypical for swimming training, particularly during heavy training periods in the competitive season and training periods focused on development of aerobic ability at the beginning of the competitive season.

The findings—specifically the range of HR of the subjects in completing the bout—bring into question the classic ideology of swimmers training in discretely defined HR zones. Though the averages of the swimmers' HR do fall into the suggested range for this bout, the between-subject standard deviation is far beyond what is expected for this exercise bout. The delineation of HR zones used by coaches appears to be idiosyncratic as opposed to dogmatic. This is especially true in countries such as the United States with decentralized swimming programs, where coaches are free to implement any training paradigm they choose without input or guidance from a national governing body.

Anecdotal evidence suggests that many coaches use zones that are far more specific (e.g., 5 bpm increments) than those shown in Table 1, and the range of HR in the present study suggests that such specificity is misguided. The findings of this study do not show that the HR zones utilized by Urbanchek and others are necessarily wrong; in fact, it is quite the opposite. A great number of repeated 100-yard bouts would presumably fall into the “red” zone, and the average HR observed in this study was representative of this. The findings of this study instead draw attention to the shortcomings of narrow HR zones, specifically by the fact that they do not account for the differences between each swimmer. Coaches must be cognizant of this fact when implementing HR zones in training.

Some practical guidelines for coaches based off the findings in this study include:

1. Test swimmers' maximum HR at various points of the season using a set of multiple, repeated maximal or very high-intensity bouts to ensure the swimmers have reached a maximum. The classic “220-minus-age” and other prediction formulas are generally not suitable for athletes.

2. Base HR zones off the individual and not arbitrary, generalized HR zones. Use percentages or subtractions from

Table 2. Average values for repetitions 6-55 for each subject and the range of each value

Subject	Mean HR (bpm)	Mean Time (s)	Percent Best Time (%)
1	161.5	68.7	73.1
2	170.7	67.5	72.9
3	160.2	63.1	75.1
4	182.7	66.2	80.7
5	149.3	68.1	68.0
6	168.3	71.8	64.1
7	168.6	66.7	71.4
8	171.0	76.5	67.9
9	168.2	67.9	73.5
10	157.0	62.9	71.9
11	182.3	73.2	66.6
12	161.7	69.4	71.4
Range	33.4	13.6	16.6

an individual's max HR to determine HR zones.

3. If possible, use waterproof HR monitors during sets of various intensities to better understand HR profiles of swimmers.

Limitations in this study include the fact that time was not perfectly controlled. It is unclear whether the change in completion time was a result of a significant change in workload. In order to truly understand this effect, data pertaining to the swimmers' VO₂ and ventilatory threshold would have been needed. It is possible that the swimmers compensated for a rise in heart rate by lowering their effort and training intensity. Further research is needed to completely describe HR responses to interval training. ◀

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The authors are faculty, students, and former students of the Counsilman Center for the Science of Swimming and Indiana University – Bloomington. The Center celebrates the many scientific, coaching, and technical innovations of the late Dr. James E. (Doc) Counsilman to the sport of swimming during his extended professional life at IU. The Center is a vital component of the Department of Kinesiology housed within the School of Public Health at IU – Bloomington. Dr. Wright is currently on the faculty at Depauw University and Dr. Kojima is currently coaching at the University of Michigan.

AN ANALYSIS OF THE NEW FORMAT FOR THE 2017 WORLD CUP SERIES

[Based on Katinka Hosszu's Racing Experience]

by Svetlana Karpeeva

On May 30 last year, FINA announced a new format for the 2017 FINA/airweave World Cup series. The new rules stated that swimmers were limited to compete only in four individual events per one leg. Also, world leaders (medalists from the 2016 Olympics and Short Course World Championships) were allowed to compete directly in finals without qualification. Additionally, swimmers only got a chance to swim the same event twice per cluster because the number of events had been reduced from 35 to 25 per meet.

This article shows both the positive and negative sides of these changes, based on statistical research of world record holder, three-time Olympic champion and 20-time world champion Katinka Hosszu, who had been the top female performer at the World Cup for the previous five years before the rule changes.

In a modern sport, we can see the tendency of increasing racing volume as one of the most powerful and useful methods of training. Racing in competition of different levels and using race-based training creates a platform for achieving the highest results in sport.

Race-based training improves an athlete's ability to use the potential of his/her body, racing strategy and mental

Table 1. Katinka Hosszu: Racing volume in 2012-16

Yearly macro-cycle	2012-13	2013-14	2014-15	2015-16
Number of competitions	22	23	28	25
Number of races	365	488	588	430
Racing volume (RV) (meters)	79,950	88,950	112,100	86,250
Average RV per meet (meters)	3,600	3,850	4,150	3,450
Average number of races per meet	17	21	21	17

preparation. It also helps to adjust better to the peculiar physical exhaustion during competition. Therefore, specialists' determination to use competition as one of the crucial forms of preparation is well understood. This is particularly evident in world-class swimmers' training at the stage of reaching maximum individual capacity.

In order to study current trends of racing volume in swimming, we analyzed the number and quality of races in which Hosszu competed during 2012-16.

As you can see in **Tables 1 and 2**, the racing volume gradually increased during the first three years of the Olympic cycle—from 79,950 to 112,100 meters), then was slightly reduced (86,250 meters) in 2016, the Olympic year.

It must be noted that in nearly all of her swimming meets, Hosszu was racing in different events of all strokes. Since she has achieved the most success in IM and backstroke, her biggest racing volume was in the 200-meter events of all the strokes.

Table 2. Katinka Hosszu: Number of races in different events and strokes

EVENT	NUMBER OF RACES			
	2012-13	2013-14	2014-15	2015-16
50 Free	13	18	30	18
100 Free	14	19	24	28
200 Free	43	42	49	36
400 Free	30	28	42	36
800 Free	13	8	14	10
1500 Free	—	2	2	2
VOLUME (meters)	33,050	31,800	44,700	36,300
50 Back	19	40	42	33
100 Back	19	42	50	46
200 Back	38	42	54	47
VOLUME (meters)	10,450	14,600	17,900	15,650
50 Breast	8	13	17	12
100 Breast	6	10	16	7
200 Breast	10	9	20	13
VOLUME (meters)	3,000	3,450	6,450	3,900
50 Fly	13	30	35	12
100 Fly	20	35	30	21
200 Fly	42	48	48	24
VOLUME (meters)	11,050	14,600	14,350	7,500
100 IM	28	25	23	5
200 IM	40	44	52	48
400 IM	29	33	40	32

Analyzing the dynamics of her racing volume from 2012 to 2015, we noticed a steady increase in the number of her 400-800 freestyle, 100-200 backstroke and 100-200 breaststroke events. It might be closely related to Hosszu's need to increase aerobic capacity, improving her best stroke (backstroke) and working on her weakest stroke (breaststroke).

During the last Olympic year, Hosszu cut nearly 50 percent of the racing volume in breaststroke and butterfly to focus more on her main events and strokes in which she competed at the Rio Olympics. We also observed that during the last year before the Olympics, Hosszu focused on the high level of performance in her main events during the season and increased their intensity.

When we studied Hosszu's results in the 200 meter IM during the Olympic cycle (see **Tables 3 and 4, next page**), we noticed the following stroke dynamics:

- *Butterfly split almost didn't change and was 27.30 during her world record-breaking race (2015)*
- *Backstroke split got faster from 32.19 in 2013 to 31.64 in WR race*

- *Breaststroke leg also improved from 37.46 to 36.60, as well as freestyle from 31.07 to 30.48.*

Her result in the 200 IM has improved from 2:07.92 in 2013 to 2:06.12 in 2015. We could see a similar tendency when we analyzed the 400 IM. In our opinion, these kinds of improvements in Hosszu's splits can prove that increasing racing volume of certain strokes has a positive influence.

The improvement in the last lap, which is 50 meters freestyle, can be related to the increase in the number of races she had swum in the 400 and 800, which helped build up her specific anaerobic capacity. The combination of these two training strategies allowed the Hungarian swimmer to set world records in the 200 IM in 2015 and the 400 IM in 2016.

Katinka Hosszu's racing preparation during the last year of the Olympic cycle (2015-16) deserves special attention. That year was her most successful so far. As mentioned earlier, in the fourth yearly meso-cycle, Hosszu slightly reduced her racing volume, but incredibly increased its intensity.

In **Table 5 (next page)**, you can see that during her training for the 2016 Olympics, Hosszu was able to go faster than eighth place in semifinals 74 times in different events. This is a huge leap for her compared to the previous three years when she wasn't able to go that fast as often (10, 8 and 44 times from 2012 to 2015).

Based on results of our research, FINA changes in the 2015 World Cup rules—which moved this competition from a short course pool to long course—were very appropriate and played a positive role in Hosszu's preparation for the Olympics.

However, in 2017, Hosszu got a chance to compete in no more than four individual events per one leg at the FINA/airweave World Cup (there was an exception during the second cluster, where swimmers were allowed to compete in six individual events per leg). It's only four to eight races total compared to an average 19 races per leg in 2012-16, which is two-and-a-half to five times fewer.

How will Hosszu gain the necessary racing volume? There are many international competitions held all over the world, where Hosszu could potentially compete. But the significant factor for an athlete to realize his/her maximum potential is to compete at high-level competition and to race against world-class competitors. Undoubtedly, the FINA/airweave World Cup provides such opportunity. After all, the main physical qualities will only improve if an athlete's performance will be above a certain threshold, which determines appearance of training effect. In this case, Hosszu will have to increase

CONTINUED >>>

the number of competitions to reach the necessary racing volume. That means she'll need to travel more, which would require extra time and energy for an athlete to adapt.

Most likely, Hosszu and her coach, Shane Tusup, will analyze how new World Cup rules will affect her 2017-18 season's results and will adjust their plan for the 2020 Olympics accordingly. As we can see, in the last year of the 2016 Olympic cycle, an increase of intensity and quality of racing had a positive influence on Hosszu's results. So, one could assume that by participating in fewer races, Hosszu might be able to move the world record barriers more often.

Consequently, for athletes such as Hosszu, who use World Cup series as an important stage of functional, tactical and mental preparation, new rules of this event will require more focus and quality of racing. Perhaps this situation will create an environment in which world-class swimmers will mobilize more and show better results. Those athletes who have a lower level of physical and mental preparation may suffer from limitations to swim different races and different strokes because they will not have enough opportunities to try out strategies. As a result,

functional and mental preparation in the environment of high-level international events will be affected as well.

Obviously, all athletes are different and should have their own optimal number of competitions, but they should also have enough volume and quality of racing experience. What influence will new FINA World Cup rules have on swimmers? We'll probably have a better picture by the end of the 2017-18 season and the 2016-20 Olympic cycle. ◀

Check out the dates and revised format of the 2018 FINA Swimming World Cup at

Table 3. Katinka Hosszu: 200 IM

Year/competition	50-meter splits				Final Time	Place
	Fly	Back	Breast	Free		
2013 Worlds	27.20	32.19	37.46	31.07	2:07.92	1
2014 Euros	27.64	32.42	37.64	30.38	2:08.11	1
2015 Worlds	27.30	31.64	36.70	30.48	2:06.12	1
2016 Olympics	27.23	31.66	36.83	30.86	2:06.58	1

Table 4. Katinka Hosszu: 400 IM

Year/competition	100-meter splits				Final Time	Place
	Fly	Back	Breast	Free		
2013 Worlds	1:01.43	1:08.28	1:17.94	1:02.76	4:30.41	1
2014 Euros	1:00.39	1:07.32	1:19.24	1:04.08	4:31.03	1
2015 Worlds	1:01.15	1:06.85	1:18.23	1:04.16	4:30.39	1
2016 Olympics	1:00.91	1:07.48	1:16.11	1:01.86	4:26.36	1

Table 5. Katinka Hosszu: Index of racing quality

Event	8th place in semifinals				16th place in prelims			
	2012-13	2013-14	2014-15	2015-16	2012-13	2013-14	2014-15	2015-16
50 Free	—	—	—	—	—	—	—	—
100 Free	—	—	—	—	—	3	—	8
200 Free	—	2	5	6	7	10	14	14
400 Free	—	—	—	—	2	4	3	6
800 Free	—	—	—	—	—	—	1	1
100 Back	—	—	1	6	2	10	14	24
200 Back	—	—	14	15	5	2	20	19
100 Breast	—	—	—	—	—	—	—	—
200 Breast	—	—	—	—	—	—	—	—
100 Fly	—	—	—	—	—	—	—	—
200 Fly	2	—	—	2	7	6	4	4
200 IM	5	3	13	25	9	12	22	32
400 IM	3	3	11	20	5	8	16	21
Total	10	8	44	74	37	55	94	129

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NATION'S CAPITAL SWIM CLUB: TRAINING FOR NCSA JUNIOR NATIONALS

>>> BRUCE GEMMELL

by Michael J. Stott

As 2017 drew to a close, Nation's Capital Swim Club added a coda to what was already a stellar season. At its December NCAP Invitational, three of its male swimmers swam under 4:31 for the 500, and two females ducked under 4:45, piling up more points to win USA Swimming's Club Excellence program for the fourth straight year. They outdistanced runner-up SwimMAC Carolina by more than 31,000 points.

Three coaches oversee the training of the five athletes from NCAP. Bruce Gemmell directs 15-year-old female Chase Travis (4:44.34); John Flanagan trains 17-year-olds Jonathan Pollock (4:30.77) and Sinead Eksteen (4:45.30); while Jeremy Linn mentors 16-year-olds Philip Manoff (4:25.78) and Sean Conway (4:28.92). Pollack and Eksteen's best 500 times are 4:28.44 and 4:44.11, respectively, swum at NCSAs (National Club Swimming Association Junior Nationals) in March 2017.

Regarding what NCAP coaches do during the months of January and February to prepare their swimmers for NCSAs in March, Gemmell opines, "I bet you would get three different answers from three different coaches." Further investigation proves him correct.

BRUCE GEMMELL

While it would be easy to assume that Katie Ledecky's club coach would treat Chase Travis the same way, Gemmell says, "Not so." In fact, he trains Travis more like he did his son, Andrew, a 2012 Olympian and open water ace.

For Travis and his other distance-oriented athletes, Gemmell observes that "the 500 yard free is practically becoming a long sprint. To compete, you need great walls, strong legs and essentially have to kick throughout. You can rest the legs briefly during the actual turn, but that's about it.

"For the 1650 and other long course races (400-800-1500), you need two sets of legs. First, you need the high position in the water to minimize drag, maintain rhythm and balance or 'float' the legs for a good portion of the race—debatable in the 400," he says. "Second, you must activate power legs/finishing kick legs to compete with the best of the best. Lots of athletes have one set of legs, but not the other.

"My training sets and cycles tend to be consistent throughout the year," Gemmell says. "We do threshold free sets approximately twice per week. Lots of that is done with the 'high-balance legs' at threshold rate and slightly slower than race pace, but finishing with race pace and legs."

"Active rest sets—two times a week. Race pace—longer repeats (over 150s) with balanced legs. On shorter repeats (150 down), we ask for 'race/power' legs. Broken/max effort swims—all race pace legs with long (3 to 10 minutes) recovery between swims."

* * *

JOHN FLANAGAN

Unlike the very specific training his former charges (John Shebat, Texas; Janet Hu, and Megan Byrnes, Stanford) get in college, Flanagan subscribes to a "one-size-fits-all" approach for his 34 swimmers.

"My emphasis is the 200 IM; Jeremy Linn's is 200 IM and 200 stroke. As club coaches directing a large number of kids going every which way, we have to hit the middle. If I shoot for the 200 IM, I can get good results in the 50 free, 200 fly, 400 IM and 500 free. From that approach, we've also had good 1000 and 1650 athletes," Flanagan says.



>>> CHASE TRAVIS

Gemmell Sets

Threshold:

2 rounds:

- 1 x 300 @ 3:20 (heart rate [HR] based on Urbanek colors): Round #1—white (24-25 HR); Round #2—pink (26-27)
- 8 x 150 @ 1:40: Round #1—4 white/4 pink (25-27 HR); Round #2 @ 1:45—4 pink/4 red (28-29 HR)
- 4 x 100 @ 1:15: Round #1—red (28-29 HR); Round #2—blue (30+ HR)

Maybe :40-1:00 rest between rounds

Or...always the favorite

- 30 x 100 @ 1:20 best average...ready, go!!

Active Rest:

- 1 x 100 @ 1:10 + 100 ez @ 1:20
- 2 x 100 @ 1:10 + 100 ez @ 1:20
- 3 x 100 @ 1:10 + 100 ez @ 1:20
- 4 x 100 @ 1:10 + 100 ez @ 1:20
- 3 x 100 @ 1:10 + 100 ez @ 1:20
- 2 x 100 @ 1:10 + 100 ez @ 1:20
- 1 x 100 @ 1:10 + 100 ez @ 1:20

Start fast 100s at 1650 (or 1500 pace intervals would be 1:20/1:30), pace and descend to 500 (400) pace by midpoint of set and hold best you can for rest of set.

Race/Broken:

3 rounds:

- 1 x 75 @ 1:10 (500 pace)
- 3 x 50 @ :50 (200 pace)
- 1 x 75 @ 1:10 (500 pace)

Extra :20 rest

- 1 x 100 @ 1:00 BEST you can go!
- 3 x 100 @ 1:40 + 2 x 50 @ 1:00 easy recovery between rounds (7:00 total recovery time)

Flanagan Sets

(done in early January)

#1—for 200-500-1000-1650 freestylers

- 24 x 125 + 25
- Done race pace + 25 EZ
- 1:20 + :40
- Try to hold pace for better-than-best 200 free

#2—for 200-400 IMers

- 36 x 75 IM + 25 EZ
- :50 rest on 75; :50 rest on the 25
- Alternate no breast and no back on the 75s
- Try to hold pace for better-than-best 200 IM



>>> JOHN FLANAGAN

CONTINUED >>>

“Basically, if you get these kids in great condition and do repetitive swimming, they are going to be good at the 500 even if they are not getting specific training for the 500 until they get to college. We go 10,000 every afternoon and Sunday morning, consisting of a lot of mixed shorter and skill swimming,” he says.

In (Jonathan) Pollock, Flanagan has a young man who has been 20.50 in the 50 free. (Sinead) Eksteen, a swimmer with a preference for distance, has also gone 49.8 flat start and 1:46.4 in the 100 and 200 free, respectively. Regardless, “everyone does exactly the same workout every day,” he says. “We change by the week and aim to cover all our bases. We don’t do any distance swimming in workout. We never do a 500 or a 400. A 200 is the longest we go. We do ‘some’ 200 repeats, but it is a very mixed bag,” he says.

“The reason we are able to swim a pretty good 500 is because we go lots of 50s, 75s and 100s. We also do some 25s, 150s occasionally; 200s are in the mix, but we swim sustained efforts on a large number of those so that one is able to swim a 500 as well as a pretty good 50.” Flanagan points to Eksteen’s 4:45.30 500 splits in December as an example of a consistent competitive effort: 54.4, 57.9, 57.9, 57.9, 57.5.

“You have to come up with a formula that takes care of everybody. I think hard, repetitive swimming does that. Work is work. You’ve got to be in the right frame of mind when you step on the block and be confident in what you’ve done. I think that’s 90 percent of it. For us, we take a little different approach, and the center line allows us to go to slow, longer swimming or the fast, quick-twitch stuff. It’s not easy and not elegant.”

But awfully successful.

* * *

JEREMY LINN

A 17-time NCAA All-American breastroker, 1996 Olympic silver medalist Linn offers diverse training to his 35 swimmers.

“We feel that diversity gives athletes the tools to be successful in multiple events and keeps them excited and interested in preparation for each race,” he says.

Following is a mid-distance freestyle focus session that Linn has given to his swimmers. “We progressed through energy zones from the 300 through the 100s, and added pads on the back half of each set for them to feel the power in their stroke. Philip (Manoff) held between 11 and 12 strokes per length, and Sean (Conway) 12 and 13. Our goal is to be consistent on these counts and evolve tempos as they increase their heart rate.”

Linn Sets

- 10 x 300 free on 4:00
1-5 no gear (equipment), descend to white (150-160 bpm)
6-10 pads, hold #5 time
- 10 x 200 free on 2:50
1-5 no gear, descend to pink (170 bpm)
6-10 pads, hold #5 time
- 10 x 100 on 1:20
1-5 no gear, descend to red (180 bpm)
6-10 pads, hold time

“The sets of 50s are presented as broken 500s, and swimmers are looking to hit a goal add-up by Round #4 at a target HR of 180. We will add 10 seconds for turn times, which we work on hitting 1.0 from last hand to feet. Round #5 pushes them to a HR of 200+, which is well beyond target race HR, so it is sort of a ‘dream add-up.’ Add-ups on last two rounds for Sean and Philip were:*

- Round #4 @ 4:10, which put them @ 4:20 with the 10 second add. (Sean’s HR was 180, Philip’s was 170).
- Round #5 @ 4:00 with +:10 @ 4:10. (Sean’s HR was 200, Philip’s was 190).

** “Dream add-up is just used because swimmers are working this part of the set at a higher heart rate than one that will be sustainable in a race at their current level of fitness. It is meant for them to exercise their gears as well as help them understand what is possible. It is the sum of the ten 50s on the last round.”*

Hold average time for each round and descend average by round

- 5x {10 x 50 free on :40 and {100 kick on 2:30

Total volume = 8,500

Results:

300s

- Sean #5 = 2:58; 6-10 = 58, 59, 58, 58, 57
- Philip #5 = 2:59; 6-10 = 59, 1:00, 58, 58, 58

200s

- Sean #5 = 1:55; 6-10 = 54, 54, 53, 54, 52
- Philip #5 = 1:56; 6-10 = 55, 56, 55, 54, 52

100s

- Sean #5 = 54; 6-10 = 54, 55, 54, 53, 53
- Philip #5 = 54; 6-10 = 54, 55, 55, 54, 53

50s Average by Round

- Sean = 29, 27, 26, 25, 24
- Philip = 29, 28, 26, 25, 24 ◀

About the Author:

Michael J. Stott, a longtime staff writer for *Swimming World* and *Swimming Technique*, is an ASCA Level 5 coach whose Collegiate School (Richmond, Va.) teams won nine state high school championships. He was named a 2017 recipient of NISCA’s Outstanding Service Award.

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SPECIAL SETS:

BEELINE TO SUCCESS

>>> COACH BILL PILCZUK

by Michael J. Stott

In March at the NAIA Championships in Columbus, Ga., the Savannah College of Art and Design (Ga.) women finished first, reprising their 2016 title, while the men placed second for the third straight year.

As has been the case in recent times, the Bees qualified a full roster for this year's ultimate meet. Given the team's talent and the relative ease of the NAIA qualifying times (traditionally two to four percent slower than the times it takes to final at the meet), SCAD swimmers were able to complete qualification early in the collegiate season. "Making finals at the NAIA meet is our season focus," says Coach Bill Pilczuk.

Such success has allowed Pilczuk to train his swimmers throughout the season without having to rest his athletes. "We do have a short taper for conference, as we compete against several top-level D-II teams," he says. "We aim to final at conference, which is a 'dry-run' for our nationals, held just 11 days after conference." This year, Bee women topped Olivet Nazarene University, 603.5 to 519 for first. The men fell 653.5 to 485.5 to Keiser University. However, on the strength of a 55-32 advantage in the 200 butterfly, the SCAD males eked past ONU for the first time ever to secure second by just four points.

In preparation for the season-ending championships, Coach Pilczuk provided a very deliberate midseason in-water training and strength-and-conditioning program. This year, November preparation unfolded as follows:

Monday a.m. Weights + power swimming: one hour in the gym, followed by a mix of speed and power in the water. During this week, we did a decreasing set of 100s at a target time that got faster as the number of 100s in the set decreased. We interspersed a series of increasing 15-meter pure sprints in between bouts of 100s.

Monday p.m. We worked on IM and drills, along with relays and starts. We also taught submerged turns and IM crossovers as our drill focus of the day.

Tuesday a.m. We ran stadium steps for 45 minutes, did dryland, sit-ups and stretching, then divided up into 200-specialist-and-above and 200-and-below groups. The longer group went 10 x 400 descend 1-4, 1-3, 1-2, 1 plus 10 x 50 200 pull 4/3/2/1 that were spread out between each set of 400s. The 200-down group went a mixed stroke, short sprint and IM set that had back-end pace on main stroke. In this instance, we did bookend 24 x 75s and 75/50/25/50 broken swims.

Wednesday a.m. "We did weights into a short power session in the water with T-shirts, parachutes and equipment, followed by warm-down, and then ending with max-kicking 100s. The distance group and those who needed a make-up practice came back for a long set Wednesday p.m. in Coach (Caylan) Tate's distance-focus session."

Thursday a.m. Back at the stadium for cross training and sprints, followed by dryland and recovery swimming in the pool of about 5K.

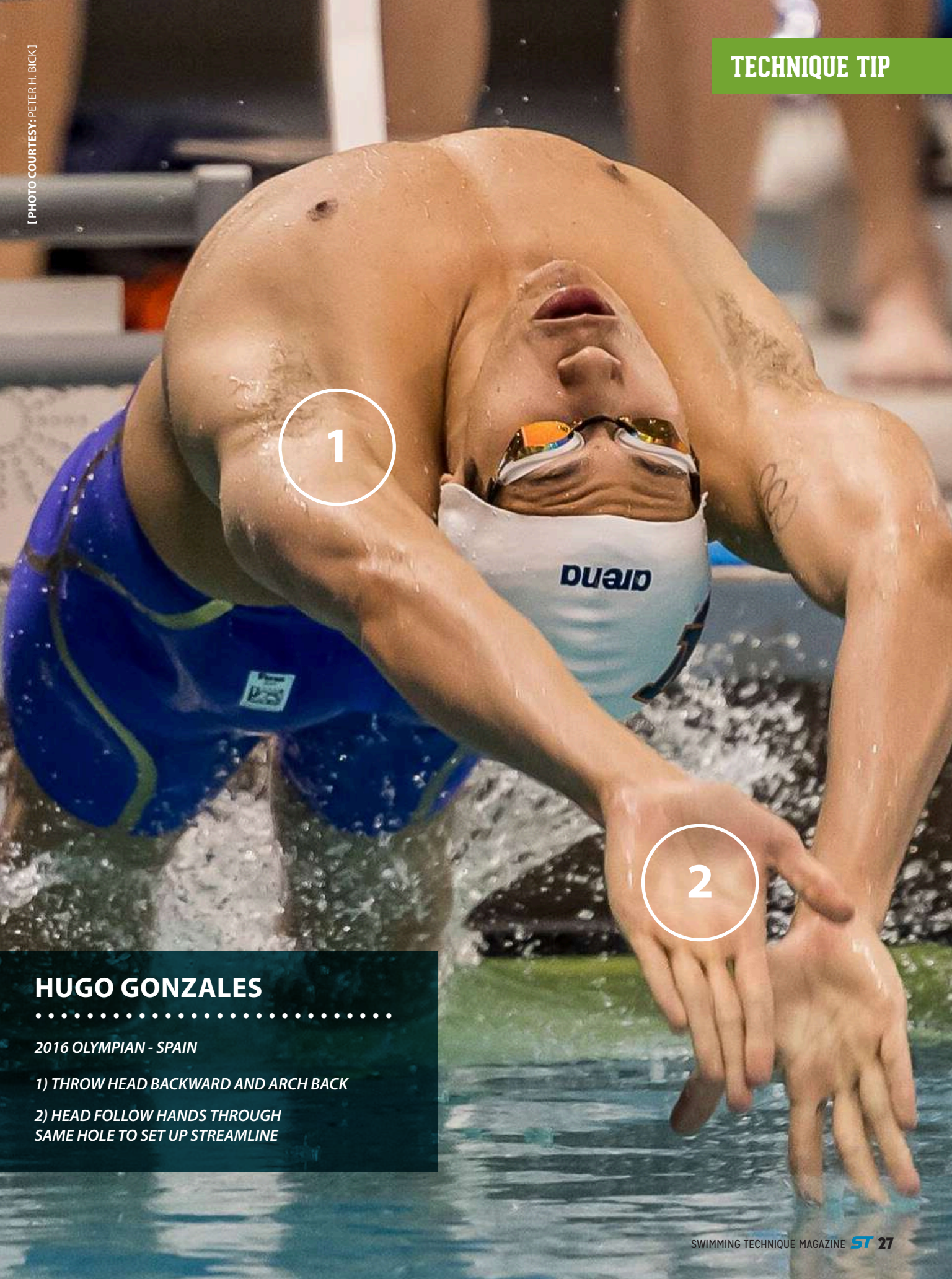
Thursday p.m. A team high-intensity set. On this day, we did 24 x 50 best average hitting a goal pace. The distance swimmers split off for a longer version that was 5x (200 + 3 x 125, descend 1-3).

Friday a.m. Weights, followed by short power and technique work.

Saturday. Team set (18 x 100 LC) focusing on kick and holding pace, ending with racing. Some swimmers did descend, some did one-on/one-off at best average, some did all 1650 or 500 pace throughout. Afterward, we raced 15, 25, 35, 25, 35 and 50 meters. ◀

About the Author:

Michael J. Stott, a longtime staff writer for *Swimming World* and *Swimming Technique*, is an ASCA Level 5 coach whose Collegiate School (Richmond, Va.) teams won nine state high school championships. He was named a 2017 recipient of NISCA's Outstanding Service Award.



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www.Bollesswimming.org

Under the direction of Jon Sakovich, swim coach of The Bolles School swimming program, The Bolles School Swim Camps are developmental camps designed to provide quality instruction and training to swimmers of all abilities. All training and instruction will take place on The Bolles School's San Jose campus, located on the St. Johns River. Campers will reside in The Bolles School's air-conditioned dormitory rooms with 24-hour supervision and meals provided three times a day.

One-week camps are intended for swimmers ages 9-13, representing all ability levels. The typical daily schedule will include 50-meter and 25-yard training, stroke technique and classroom lecture sessions, videotaping, starts and turns and a fun daytime activity. One-week camps will be limited to 25 swimmers per week.

The elite camp is designed for experienced swimmers ages 13-18. Elite campers will train like members of the Bolles Sharks swimming program, including national high school champions, Florida high school state champions, high school All-Americans and Olympians.

June 10-15, June 16-21 One-Week Camps
June 10-July 21 (Up to Six Weeks) Elite Camps

CAL STATE UNIVERSITY-MONTEREY BAY WOMEN'S WATER POLO

Emily Schmitt, Head Coach
4113 2nd Ave., Seaside, CA 93955
510-703-9477 • Fax 831-582-4023
eschmitt@csumb.edu
www.otterwaterpolocamps.com

Four sessions of water polo and swimming instruction and training are open to entrants 13 to 18 years old. The camp is located in the heart of the beautiful Monterey Bay National Sanctuary, the jewel of California's Central Coast.

Camp Director Emily Schmitt is head coach of the CSU-Monterey Bay women's water polo team and is one of the most successful active West Coast/Northern California water polo coaches. With more than two decades of collegiate and national-level championship experience, she brings a wealth of knowledge and expertise to our Water Polo & Swimming Camp.

With more than a dozen years of coaching and camp instruction—of which six were at the Dave Salo USC Swimming Camp—Brian Potts is one of the most experienced swimming camp coach/instructors in Northern California. He is currently head site coach for the Dolphins of Monterey County and swim camp director for the Pacific Swimming LSC in Northern California.

Daily camp activities include dryland training, dryside instruction and two daily in-water "wet-side" sessions in water polo and swimming while offering a perspective of "the college experience," nestled in an incredible destination.

Guest speakers will discuss nutrition, the college recruitment process, goal setting and psychology of sport. The experienced staff and counselors allow for a 4:1 student-instructor ratio in order to give the maximum learning experience. A planned trip to the famous Monterey Bay Aquarium is part of the weekly itinerary. **See display ad on page 34.**

June 10-15 Session I
June 17-22 (Girls Only) Session II
June 24-June 29 Session III
July 8-13 Session IV

CAMP CHIKOPI—For Boys

Bob and Colette Duenkel
373 Chikopi Rd., Magnetawan, Ontario,
POA 1PO Canada
954-566-8235 • 705-387-3811
campchikopi@aol.com
www.campchikopi.com
<https://www.facebook.com/CampChikopi>
<https://www.instagram.com/campchikopi/>

THE WORLD'S FIRST SWIM CAMP (1920)

Chikopi is a unique mix of a traditional and competitive sports camp. We are

renowned for being the first swim camp and the oldest competitive sports camp in the world. Voted as one of the best boys sports camps in Ontario (Canada), we offer more than 30 land, water, specialized sports and activities, including open water swimming, triathlon, war canoe and canoe tripping.

Campers range from boys who just want to have fun playing sports and being outdoors to those who are gifted athletes. We have programs to fit everyone's needs and fulfill their summer goals.

Chikopi is very international—we are extremely proud of our diversity and inclusiveness. We have many nationalities, languages and customs at Chikopi. It is an excellent opportunity for boys to be technology-free and be immersed in a variety of cultures.

Our wilderness location and rustic setting add to the extraordinary experience that a summer at Chikopi provides.

June 27-July 11 Two Week A
July 4-18 Two Week B
July 11-25 Two Week C
July 18-Aug. 1 Two Week D
Aug 1-15 Two Week E
June 27-July 18 Three Week A
July 25-Aug. 15 Three Week B
June 27-July 25 Four Week A
July 18-Aug. 15 Four Week B
June 27-Aug. 15 Seven Week
Other: Pre-arranged with Directors

CAROLINA SWIM CAMP

Coach Duncan M. Sherrard, Camp Director
Koury Natatorium, Chapel Hill, NC 27514
dsherrard@unc.edu
www.carolinaswimcamp.com

Day camps are designed to focus solely on starts, turns, relay exchanges and underwater work. We video and focus on the details that often get glossed over. This is dedicated time to break down and review the skills that make your swims faster.

Technical and Training camps focus on training swimmers' energy systems for success in summer swimming as well as developing and enhancing the training and racing skills of competitive swimmers. This is a combined technique and training camp that will have three main training groups: one for distance-oriented swimmers, one for middle distance stroke/IM swimmers and one for sprinters. Each group will train the needs for the distance of events in that group.

Overnight campers are housed at UNC—close to Koury Natatorium—in Hinton James Dorm. The dorm is arranged in suites.

Every camper will receive a Carolina Swim Camp T-shirt, Carolina Swim Camp latex swim cap, Carolina Swim Camp lanyard and Gatorade water bottle. Both Technique and Elite campers will be filmed and will be

provided feedback from a UNC swim coach.
Camp Fees: \$200 for Mini Camps to \$690 for Technical/Training Overnight Camps. Ages: 8-18.

April 21-22 Mini Day Camp

June 9-10 Day & Overnight Weekend Camp

June 10-14 Day & Overnight Week Camp

June 16-17 Day & Overnight Weekend Camp

June 17-21 Day & Overnight Week Camp

June 23-24 Day & Overnight Weekend Camp

THE JOSH DAVIS ULTIMATE SWIM CAMP AT TBarM

3332 Dornoch Dr.
Edmond, OK 73034
210-889-7667
josh@joshdavis.com

The Ultimate Swim Camp is the only one of its kind in the world! Three-time Olympic gold medalist Josh Davis and award-winning college coach Dan Lloyd bring together the best of aquatic training and the best of outdoor summer fun combined with the best character and Christian encouragement to make the Ultimate Swim Camp!

With an unbeatable camper-to-counselor ratio of 5 to 1 and now in its 11th year situated in beautiful New Braunfels, Texas, Josh and Dan bring creative, challenging workouts combined with ropes courses, water parks, Bible studies, skits, games and memories and friendships that last a lifetime.

Our camp motto is "Don't Waste Fun!" Ultimate Swim Camp—the way summer swim camp was meant to be! Only 50 spots available so reserve yours today at www.tbarmcamps.org/swim-camp.

June 17-23 Week 1

July 1-7 Week 2

FITTER AND FASTER

9055 Comprint Court, Suite 200
Gaithersburg, MD 20877
786-837-6880
www.fitterandfaster.com

WHY TRAVEL ACROSS THE USA FOR A SWIM CAMP WHEN YOU CAN HAVE ONE IN YOUR OWN POOL?

The Fitter and Faster Swim Tour Presented by *SwimOutlet.com* produces clinics led by many of the most successful swimmers in the history of the sport. Fitter and Faster is the industry leader in clinics for competitive swimmers, having orchestrated more than 800 clinics in 40 states...and the reviews are fantastic!

In 2018, FFT expects to produce more than 300 clinics for swimmers of all ages and ability levels. Call Fitter and Faster to

customize a clinic that you can host in your home pool. **See display ad on page 29.**

FLORIDA GULF COAST UNIVERSITY

Caroline Rollins, Camp Director
11965 Cypress Links Dr.
Fort Myers, FL 33913
513-515-7371
eagleswimcamps@gmail.com
www.eagleswimcamps.com

Eagle Swim Camps at Florida Gulf Coast University focus on providing skill instruction on all four competitive strokes, while also providing an incredible overall summer camp experience.

Our campers, ages 8-18, will enjoy learning from our championship coaching staff the skills to improve their competitive strokes and turns during their three-water sessions per day. Between sessions each day, campers will experience special guests and events, including Q&A and swimming with Olympic and world champion swimmers, beach luau, movie night on the water and our special rock wall. Resident campers will also enjoy staying in 2018's Best Public University Dorms in America.

Eagle Swim Camps aim not only to educate our swimmers, but also continue to foster a love for fun in the sport of swimming. Registration is open!

June 3-7 Technique Camps

June 7-10 Elite Training Camp

June 10-14 Technique Camps

June 17-21 Technique Camps

NEAL STUDD SWIM CAMP AT FLORIDA STATE UNIVERSITY

Dan Carrington, Camp Director
Florida State University
2560 Pottsdamer St.
Tallahassee, FL 32310
850-644-5946
dcarrington@fsu.edu
www.fsuswimcamp.com
www.seminole.com

The Neal Studd Swim Camp at Florida State University is a camp that focuses on giving each swimmer, ages 7-18, the tools to improve his or her overall technique. The camp focuses on fitness, stroke technique, starts, turns, nutrition and mental training.

Each camper will receive specific instruction on all four strokes, turns and starts. There will be classroom sessions on these principles as well as talks on nutrition. We will also have champion swimmers come in to talk to our campers.

Our goal each session is to give your camper the tools to improve his or her swimming as well as give them a renewed love of the sport! We love to hear from our

campers each year that they have a "renewed love of the sport" and/or that they "were so excited to drop time!"

June 4-8 Session 1

June 9-13 Session 2

June 18-22 Session 3

HARTWICK COLLEGE COMPETITIVE SWIMMING AND DIVING CAMPS

Dale Rothenberger, Director and Camp Coach
Hartwick College, Oneonta, NY 13820
607-431-4714 • Fax 607-431-4018
rothenberged@hartwick.edu
www.hartwickhawks.com/camps

CELEBRATING ITS 39th YEAR

An extensive program for ages 8-18 (coeducational...resident and commuter campers) emphasizing improvement in the fundamental skills of competitive swimmers and divers. Morning, afternoon and evening sessions will balance time spending with water and dryland training. Above and underwater filming and analysis. Lectures on nutrition, mental preparation, strength training, etc.

Sprint/distance camp emphasizes conditioning and proper training of the major energy systems. Diving camp concentrates on technical improvement on 1- and 3-meter springboard diving. Stroke camp enables competitive swimmers to develop skills and techniques in starts, turns, IM and competitive strokes. Special two- and three-week sessions are available.

Director Dale Rothenberger, Hartwick swimming and diving coach, will be joined by a staff of highly experienced coaches, counselors and guest clinicians (1:5 staff/camper ratio). Enrollment limit guarantees individual attention and frequent feedback.

Residential Camp: \$630 per week. Commuter Camp: \$515 per week. (Multiple-week discounts available.)

July 8-14 Stroke Technique Camp

July 15-21 Stroke Technique/Sprint/

Distance Camps

July 22-28 Stroke Technique Camp

July 29-August 3 Springboard Diving Camp

LONGHORNS SWIM CAMP

Jon Alter, Director
The University of Texas
P.O. Box 7399, Austin, TX 78713-7399
512-475-8652 • Fax 512-232-1273
longhornswimcamp@athletics.utexas.edu
www.Longhornswimcamp.com

41 years of excellence! Headed by 2012 Olympic and Texas head men's coach Eddie

— continued on 32

Reese, 2017 World University Games and women's head coach Carol Capitani, associate head coach Roric Fink and assistant coach Wyatt Collins, the Longhorns Swim Camp is the most exciting camp in the country! Guest coaches and speakers include Olympians Ian Crocker, Josh Davis, Colleen Lanne-Cox, Garrett Weber-Gale, Ricky Berens, Jack Conger and Whitney Hedgepeth. Open to male and female competitive swimmers, ages 8 to 18.

Camp is held at the Jamail Texas Swimming Center on the University of Texas at Austin campus, home to 22 NCAA team champions. Facility includes a 50-meter by 25-yard pool and 25-yard by 25-meter pool. Four training groups based on age and ability, with a 1:7 coach/swimmer ratio in technique sessions.

Daily training includes challenging long-course sessions Monday-Friday mornings; technique sessions Monday-Thursday afternoons and evenings, with start/turn work included. Classroom sessions on technique and race strategies held. Underwater video of each camper analyzed by a coach. Daily social activities and field trips offered. Multiple-week stays include planned weekend activities with supervision. Experienced, mature, adult staff provides 24-hour supervision. Cost: Overnight Camp \$1,045; Day Camp \$945. Complete camp information and online registration available at Longhornswimcamp.com.

Per NCAA rules, sport camps and clinics conducted by The University of Texas are open to all entrants. Enrollment is limited only by age, grade level, gender and capacity restrictions as specified by each camp. NCAA guidelines prohibit payment of camp expenses by a representative of The University of Texas' athletics interest. NCAA rules also prohibit free or reduced camp admission for prospects (9th grade and above). **See display ad on page 35.**

Five one-week sessions from:

May 27-June 29

MERCERSBURG SWIM CLINICS

Glenn Neufeld, Head Coach
Mercersburg Academy
300 East Seminary St.
Mercersburg, PA 17236
717-328-6225

summerprograms@mercersburg.edu
www.mercersburgsummer.com

Mercersburg Swim Clinics are dedicated to improving your technique and helping you develop as a swimmer both inside and outside of the pool. Mercersburg Academy's storied aquatics program has produced over 30 Olympians and brings a tradition of excellence to their summer program. The primary aim of Mercersburg Swim Clinics

is to provide an experience that teaches swimmers the most innovative techniques available, while having fun. The philosophy is simple. Swimmers do not just compile distance, but rather work on improvements in starting, turning and stroke techniques.

Mercersburg Swim Clinics participants stay in Mercersburg Academy's state-of-the-art residence halls that are recently renovated, air-conditioned with carpeted hallways, and have bathrooms on every hall with individual shower stalls. The swimmer-to-staff ratio is around 5 to 1. Mercersburg Academy's elite coaching staff and other successful coaches from colleges and club teams will instruct swimmers throughout the week. Counselors are generally current and former college swimmers or Mercersburg Academy graduates with swimming experience.

Enroll before March 15 to take advantage of early-bird pricing! *Mention this listing and use the promo code "SWIMMINGWORLD10" to receive a 10% discount! Team discounts are also available.*

June 17-21 Session I

June 24-28 Session 2

MICHIGAN SWIM CAMP

Jim Richardson, Camp Manager
8160 Valley View Dr., Ypsilanti, MI 48197
734-845-8596 • Fax 734-484-1222
umswim1@gmail.com
www.michiganswimcamp.com or
www.camps.mgoblue.com

Four sessions open to any and all entrants, limited to 195 campers per session in Canham Natatorium at the University of Michigan. A staff of 50 and three instructional sessions per day ensure the individual attention necessary for significant improvement. Coaches Mike Bottom, Dr. Josh White, Rick Bishop, Sam Wensman, Kristy Brager, Kurt Kirner and Roger Karns are directly involved in coaching and teaching campers.

All campers HD-filmed and receive a written stroke analysis. Optional custom 4-view underwater video available for an additional fee. Choose the Intensive Training Tract or the Technique Development Tract. World-class staff provides leadership and mentoring that encourage each swimmer to strive for excellence in and out of the pool.

Cost: \$850/week includes instruction, swim cap, T-shirt, color photo, instructional printed materials, "goody bag" plus room and board; \$690/week day camper fee includes all of the above (less room and board) and between-session supervision. **See display ad on page 35.**

June 10-14 Week 1

June 17-21 Week 2

July 29-Aug. 2 Week 3

Aug. 5-9 Week 4

NAVY SWIMMING CAMPS

Bill Roberts, Camp Director
Navy Swimming Camps 2018
566 Brownson Rd., Annapolis, MD 21402
410-293-5834, 410-293-3012
Fax 410-293-3811
navyswimmingcamp@usna.edu
www.navyswimmingcamp.com
www.navysports.com
Facebook search: Navy Swimming Camp

Now going into our 21st season, expect direct results by being part of the 2018 Navy Swimming Camp this summer! Our principal goal is to provide you the very best in individual instruction, evaluation, camper experience and safety/supervision. The purpose of our camp is to offer you a unique environment to learn and develop your competitive strokes, including all related starts, turns and finishes.

Navy Swimming Camp is a stroke-intensive camp. Swimming campers will receive individual attention. Additional training sessions are offered to all needing to maintain conditioning while at camp. Video analysis, dryland activities designed to improve individual fitness levels, performance, training, goal setting, leadership presentations and the Severn River boat cruise are all part of the schedule for 2018.

New in 2018: we are pleased to offer an advanced camp option during Session I.

Campers will learn, train and reside in an amazing and unique environment on the grounds of the United States Naval Academy. Additionally, teamwork and leadership are important points of emphasis for every camper. The Navy camp is led by an experienced camp staff while providing the very best in 24-hour supervision.

See www.navyswimmingcamp.com for greater detail, including brochure, application, daily schedule and frequently asked questions. Cost for each camp: \$670/commuter camper (ages 8-18), \$720/extended day camper (ages 8-18), \$770/resident camper (ages 9-18). All campers receive a NAVY swimming shirt & an exclusive NAVY backstroke flag. Go Navy!

June 12-16 Session I

June 18-22 Session II

June 16 & 17 Clinics

(see website for 2018 clinic offerings)

PITTSBURGH OVERNIGHT SWIMMING CAMPS

Marc Christian, Camp Contact
3470 Allequippa St.
Pittsburgh, PA 15213
401-374-9429
mchristian@athletics.pitt.edu
<https://camps.jumpforward.com/pittsburghswimmingcamps>

Our overnight swim camp is designed to inspire competitive swimmers to develop their strokes and training while swimming under the guidance and experience of some of the best college coaches in the country!

University of Pittsburgh head coach and 1996 Olympic gold medalist, John Hargis, along with his Pittsburgh University coaching staff will instruct campers on the newest stroke and training techniques and other topics such as preparing for college, sport nutrition and goal setting.

Camp will also include videotaping and individual stroke analysis and instruction, nightly team-building activities and a low camper-to-staff ratio.

Cost: \$595. Additional camp information can be found at

<https://camps.jumpforward.com/pittsburghswimmingcamps>.

June 17-21 Week 1

June 24-28 Week 2

STR SPEEDWEEK SWIM CAMPS

THE SCIENCE TO IMPROVE YOUR STROKE

At STR SpeedWeeks, swimmers undergo intensive technique instruction and analysis with Dr. Rod Havriluk, world-renowned biomechanist and swimming technique expert. Dr. Havriluk has been improving swimmers' technique for more than 30 years and is internationally recognized for his approach to accelerating skill-learning and preventing shoulder injury. He recently presented at FINA, IOC, USAS, USMS, ASCA and ISCA conferences.

Swimmers receive individual feedback to improve technique and learn practice strategies so they can continue to improve when they return to their normal training routine. The patented Aquanex analysis captures force data and underwater video to provide visual and quantitative technique data. This science-backed analysis is unlike anything else in the world of swimming, giving swimmers the tools to fine-tune their technique and make drastic time drops.

Each SpeedWeek is limited to 12 swimmers to ensure maximum individual attention. Check our schedule for a camp near you:

<https://swimmingtechnology.com/swim-camp-and-clinic-schedule-for-2018/>

TOTAL PERFORMANCE SWIM CAMPS AT KENYON COLLEGE & CALVIN COLLEGE

740-398-4464
www.tpsccamps.com

Total Performance is one of the nation's premier swim camp programs at Kenyon College and Calvin College. The Kenyon Camp is headed by 2016 NESCAC Coach of the Year and head coach at Middlebury College, Bob Rueppel; and the Calvin Camp by 13-time MIAA conference team champion and head coach at Calvin, Dan Gelderloos; along with other collegiate head and assistant coaches and current collegiate swimmers.

Competitive Stroke Camps at both Kenyon College and Calvin College feature our nationally-ranked collegiate coaches; challenging, but fun, pool sessions that focus on both training and technique in all four strokes and starts and turns; take-home videotaping and analysis with a collegiate coach's feedback; special guest speakers that include Olympians and internationally-ranked coaches on inspirational topics; educational classroom sessions on sports psychology and technique; and drylands designed for improving swimming.

Open to any-and-all competitive swimmers, ages 10-18. Our Total Performance Elite Camps offer intensive, specialized programs designed for elite-level swimmers, ages 13-18. These camps feature nationally- and internationally-ranked headliners as well as top collegiate coaches.

The Elite Camps are intensive programs that provide elite swimmers with cutting-edge training and techniques in each specialty, data-driven classroom sessions and swimming-specific drylands. Both Kenyon College and Calvin College feature beautiful facilities that have been rated in the Top 20 by the Princeton Review.

Our camps provide 24-hour supervision by our staff of collegiate swimmers and coaches, providing greater opportunities for mentorship during the week. Our camps have attracted more than 10,000 competitive swimmers from 48 states and 13 countries to discover their own "Total Performance!"

Cost: Competitive Stroke Camps (overnight) \$615; Competitive Stroke Camp (day) \$510; Elite Camps (overnight) \$685; Elite Camps (day) \$600. Space is limited. Call 740-398-4464 or visit www.tpsccamps.com.

Competitive Stroke Camp at Kenyon

June 10-14 Session 1

June 17-21 Session 2

June 24-28 Session 3

Competitive Stroke Camp at Calvin

June 17-21

Elite Distance Camp at Kenyon

June 10-14

Elite Breaststroke Camp at Kenyon June 10-14

Elite Fly/Back Underwater Camp at Kenyon June 17-21

Elite Sprint Camp at Kenyon June 23-27

VILLANOVA SWIM CAMP

Rick Simpson, Head Coach
Villanova University
610-519-7212
rick.simpson@villanova.edu
www.wildcatswimcamp.com

Villanova Swimming prides itself on its long history of excellence in the distance events. Villanova athletes have experienced great success in the distance events, including several back-to-back conference champions, record holders, NCAA qualifiers and Olympians from several nations. Now you can spend a week in the Villanova "D-Group"!

Two in-pool training sessions daily. Each session will be directed by Coach Simpson personally.

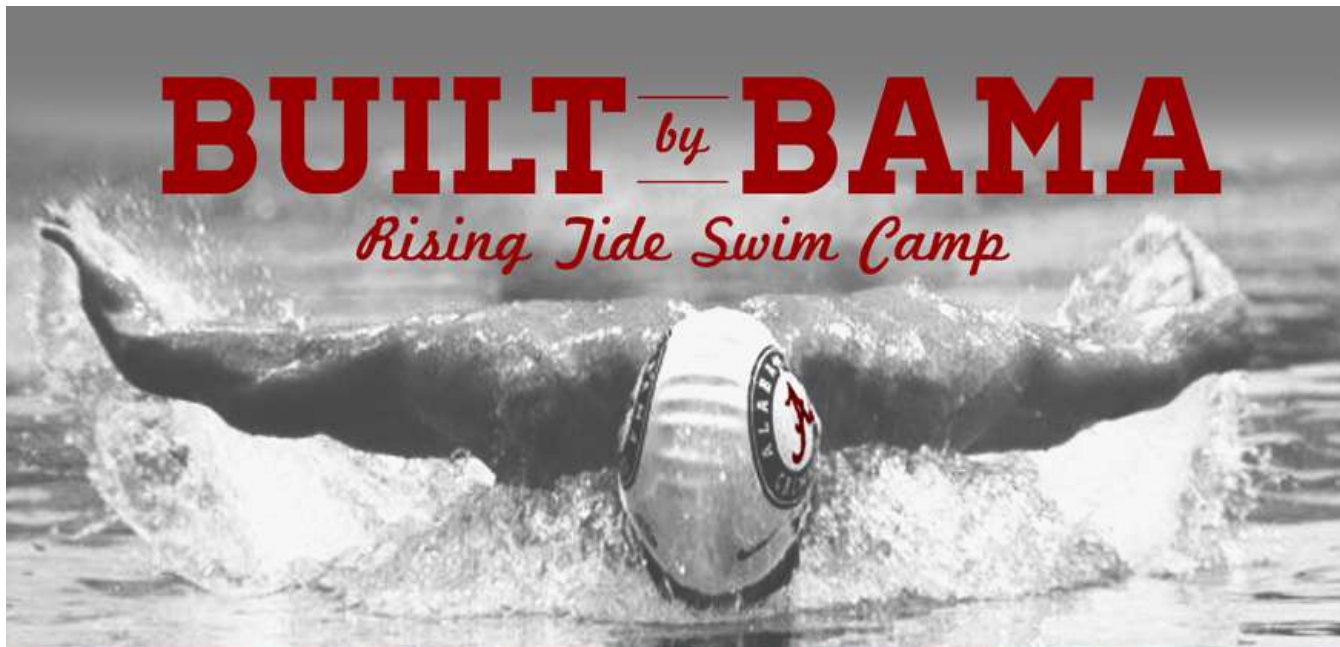
- Dryland program
- Lunch break provided in the Villanova Dining Hall
- Guest lectures and technical meetings covering race strategies and pacing, nutrition, health management in a high-volume program, stroke technique, etc.
- Overnight and day camp available.

The Four-Stroke Technique Camps: Each week, the Villanova coaching staff will focus on all aspects of competitive swimming. The camper will be exposed to a variety of topics such as stroke technique, training methods, strength training, nutrition and sports psychology. The Four-Stroke camps are day camps only.

June 25-June 29 Distance Training Camp - Overnight and Day Camps

July 9-July 13 Four-Stroke Camp - Day camp only ❖

Check out camp listings at
www.swimmingworld.com/camps



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Rising Tide Swim Camp

A **LEARN TO SWIM LIKE A CHAMPION**

WITH HALL OF FAME AND OLYMPIC COACHES DENNIS PURSLEY & JONTY SKINNER

MAY 27TH - JUNE 1ST | JUNE 3RD - 8TH | JUNE 10TH - 15TH | JUNE 17TH - 22ND

REGISTER NOW TO GET THE EARLY REGISTRATION DISCOUNT AT ALABAMASWIMCAMP.COM



OTTER WATER POLO/SWIM CAMP

REGISTRATION / INFO: WWW.OTTERWATERPOLOCAMPS.COM


DATES / TWO WATER SESSIONS PER DAY

JUNE 10 TO JUNE 15 JUNE 17 TO JUNE 22 (GIRLS ONLY DATES)


JUNE 24 TO JUNE 29 JULY 8 TO JULY 13

AGES 13 TO 18 YEARS OLD MUST BE COMPETENT IN SWIMMING

IMPROVE YOUR SKILLS AND HAVE FUN AT MB OTTER WATER POLO AND SWIMMING CAMP.



EMILY SCHMIT, JD
HEAD COACH
CSUMB WATER POLO



BRIAN M. POTTS
HEAD SITE COACH
SEASIDE AQUATIC CLUB

LONGHORNS

THE UNIVERSITY OF TEXAS • 2018 SWIM CAMP • MAY 27 – JUNE 29

LONGHORNS SWIM CAMP

41 Years of Excellence

Five one-week sessions from:
MAY 27-JUNE 29

For detailed information,
contact Longhorns Swim Camp Director:
JON ALTER | 512 475 8652

Complete camp information and registration at:
LonghornSwimCamp.com

Email:
longhornswimcamp@athletics.utexas.edu

Per NCAA rules, sports camps and clinics conducted by The University of Texas are open to all entrants. Enrollment is limited only by age, grade level, gender, and capacity restrictions as specified by each camp.



2018 CAMP DATES – REGISTER EARLY!

WEEK 1 – JUNE 10-14

WEEK 2 – JUNE 17-21

WEEK 3 – JULY 29-AUG 2

WEEK 4 – AUGUST 5-9

Not pictured:
Kurt Kirner
Hillsdale College Head Coach
Roger Karns
Lewis University Head Coach

CAMP HIGHLIGHTS:

Gambetta Dryland Training
Technique & Intensive Training Options
3 Instructional Sessions Per Day Individual HD
Filming & 1:1 Analysis True Colors & Mindset
Training Olympians & NCAA All Americans

WORLD CLASS COACHES:



Mike Bottom
Head Coach
US Olympian & Olympic Coach



Dr. Josh White
Associate Head Coach
NCAA All-American & National Champion



Rick Bishop
Associate Head Coach
USA National Team Staff Member



Sam Wensman
Assistant Coach
CW Elite Coach



Kristy Brager
Assistant Coach
Academic All-Big Ten



Jim Richardson
Camp Director
2-Time NCAA Coach of the Year

Contact us at: 734.845.8596 | umswim1@gmail.com

Michigan Swim Camps are open to any and all entrants, limited only by age and specified number of participants





SWIMMING TECHNIQUE EDITORIAL GUIDELINES

Swimming Technique is a multi-disciplinary, science-based quarterly journal focused on the training, education and development of swimming coaches who are coaching swimmers for high performance, i.e., national- and international-level swimming competition.

Articles in the magazine are categorized into the following:

- Environment (e.g., culture, team dynamics, leadership)
- Mental Preparedness (e.g., emotion management, confidence, mindfulness, mental toughness, relaxation concentration)
- Nutrition (e.g., hydration, supplements, peak performance diet and nutrition management plans)
- Physical (e.g., physiology of training and competition)
- Science and Innovation (e.g., current scientific research, literature reviews, breakthrough technologies)
- Sports Medicine (e.g., injury minimization and management)
- Strategy and Tactics (e.g., pacing, prelims to finals, race tactics)
- Technical (e.g., biomechanics, swimming stroke technique, swimming skills, swimming drills)
- Training and Recovery (e.g., periodization and planning, strength training, recovery practices, massage, hydrotherapies)

All contributions are welcome. However, we ask that all contributors observe the following editorial guidelines:

1) All contributions should be between 500 and 1,500 words in length. They should be submitted as Word documents or in an email. Contributions should fall within one of the aforementioned section categories.

2) All contributions should be submitted along with the contributor's personal details and a short bio of no more than 100 words.

For example:

Name:

Street Address:

City, State and Zip Code:

Cell phone:

Email Address:

SKYPE Address:

Article Title: "Mindfulness and its Role in Enhancing the Performance of National-level Swimmers"

Swimming Technique Section: Mental

Short Bio: (Name) has worked in the field of exercise science for the past 15 years. He is also a dedicated swimming coach, and coaches at the New York Marlins Swim Team. He holds a bachelor's degree in exercise science from Columbia and a master's in sports physiology from UCLA.

3) Contributors are encouraged to integrate current, peer-reviewed research with practical applications and implications for coaches. The magazine aims to help coaches to access the latest ideas, innovations and concepts in sports science and sports medicine, and apply them to the development of swimmers preparing for national- and international-level competitions.

4) All contributions should include a minimum of three independent references— i.e., not the author's own work. All references and citations should be listed at the end of the contribution, using the Harvard referencing method.

5) Where appropriate, contributions may be independently reviewed and assessed for their appropriateness for publication.

6) Contributors may promote products and services within their contributions, but must declare their association with any product or service mentioned or promoted in the contribution.

7) The editorial staff may choose to invite appropriately qualified and experienced professionals—e.g., sports scientists, researchers and coaches—to comment on contributions, particularly where their input may help readers apply the information to their coaching programs.

8) All contributions remain the intellectual property of the author. *Swimming Technique* will use the contribution solely for publication in the *Swimming Technique* magazine and will not re-use the contribution in any other format or for any other purpose without the expressed written consent of the contributor. ♦

Brent Rutemiller

Publisher - *Swimming Technique*

email: BrentR@swimmingworld.com

Celebrate

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\$100

INDIVIDUAL MEMBERSHIP



- Basic Member Benefits
- ISHOF Pin & Vintage ISHOF Patch Limited Collectors Edition
- Swimming World Magazine

[Join Now](#)

\$500

LEGACY MEMBERSHIP



- Basic Member Benefits
- ISHOF Pin & Vintage ISHOF Patch Limited Collectors Edition
- ISHOF Embroidered Polo Shirt
- Swimming World Magazine

[Join Now](#)

\$250

FAMILY MEMBERSHIP



- Basic Member Benefits
- ISHOF Pin & Vintage ISHOF Patch Limited Collectors Edition
- ISHOF T-Shirt Supporting Your Sport
- Swimming World Magazine

[Join Now](#)

\$1000

CORPORATE MEMBERSHIP



- Basic Member Benefits
- ISHOF Pin & Vintage ISHOF Patch Limited Collectors Edition
- ISHOF Embroidered Jacket
- Swimming World Magazine

[Join Now](#)

BASIC MEMBER BENEFITS

STAY CONNECTED

- Monthly Member ISHOF e Newsletter
- Annual Yearbook With Your Name Listed
- 12 Month Swimming World Magazine Subscription

MEMBER DISCOUNTS

- Discounted Ticket Price At ISHOF Events And Ceremony
- 10% OFF At The Museum/Swim Shop



- ☐ Individual Membership..... \$100
- ☐ Family Membership.....\$250
- ☐ Legacy Membership.....\$500
- ☐ Corporate Membership..... \$1000
- ☐ T-shirt/Polo/Jacket Size - ☐ S ☐ M ☐ L ☐ XL ☐ XXL
- ☐ T-Shirt Sport - ☐ Swim ☐ Dive ☐ Synchro ☐ H2O Polo
- ☐ I also want to make a tax-deductible donor contribution in the amount of \$ [Donate Now](#)
- ☐ Donation In Honor of My Coach-Name: _____

Return completed form with payment to:
ISHOF, One Hall of Fame Drive, Fort Lauderdale, FL 33316
p (954)462-6536 / f (954)525-4031
or pay through our store at www.ishof.org

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

E-mail _____

Payment (Check one): ☐ Check ☐ Visa ☐ MC ☐ AmEx ☐ Discover

Enclosed is my check to ISHOF for a total of \$ _____

Please charge my credit card for a total of \$ _____

Acc't# _____

Exp. Date _____ Card Code _____

Signature _____

Contributions to the International Swimming Hall of Fame, a tax-exempt organization under section 501c3 of the Internal Revenue Code, are deductible for computing income and estate taxes.

TECHNIQUE TIP

JOHN SHEBAT

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2016 US OLYMPIC TRIALS QUALIFIER - 100M BACKSTROKE

- 1) PINKY FINGER ENTRY
- 2) EARLOBES JUST BELOW SURFACE
- 3) CHIN SLIGHTLY RAISED

1

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