

## BULLET HEAD SNORKEL

Engineered with the most hydrodynamic features, the Bullet Head Snorkel is low profile, built for high speeds, and ideal for sprinters looking for stability in their training snorkel.

1 SMALLER TUBE OPENING
Reduces air flow and improves lung capacity
2 LOW PROFILE SHAPE
designed for maximum vision and reduces drag
3 PADDED ADJUSTABLE HEAD BAND adds comfort for long hours in the pool





MNELIEEMT MUSEA EIGMPRESEIONO O
 TMIERNAL BONDEDSEMMSO

# $3011051 / 2$ THE EAREON SERIES 

Jntroducing the Carbōn family, now àvailable in Flex or Pro




SWIMMING WORLD MAGAZINE (ISSN 0039-7431). Note: permission to reprint articles or excerpts from contents is prohibited without permission from the publisher. The publisher is not responsible for errors in advertisements. Microfilm copies: available from University Microfilms, 313 N. First St., Ann Arbor, M1 48103. Swimming World Magazine is listed in the Physical Education Index. Printed in the U.S.A. © Sports Publications International, May 2014.

## FEATURES

010 | Lessons with the Legends: Bob Groseth
by Michael J. Stott

012 An Olympian's Guide to Backstroke Starts by Jeff Commings

Matt Grevers knows how to make the most of his backstroke start, making sure he's one of the leaders when he breaks out at the 15-meter mark.

016 | The Key is Having Fun
by Michael J. Stott
Swimming World provides a parent's guide to picking the best age group program for your child.

018 | Swimming Technique Misconceptions: Butterfly Hand Path
by Rod Havriluk

020 | We Didn't See That Coming! by Jason Marsteller
In its college preview issue, Swimming World claimed Cal was a lock to win this year's women's NCAA Division I team titleespecially with freshman superstar Missy Franklin leading the way. Instead, Georgia dominated in winning its second straight and sixth overall championship.

023 | Brittany MacLean's Favorite Sets by Jeff Commings

028 | More than Meets the Eye by Jeff Commings
"Controversy"," fabulous freshmen" and "barrier breakers" were among the additional topics of conversation that accompanied the obvious story at the men's NCAA Division I Swimming and Diving Championships: Cal captured its third team title in the last four years!

033 | Can't Anyone Beat These Guys? by Jason Marsteller
The same five schools-Drury, Emory, Kenyon, Oklahoma Baptist and Indian River State College-repeated as national champions in their respective NCAA Divisions II and III, NAIA and NJCAA women's and men's meets. Leading the group was Drury's menwho earned their 10th straight DII title-and Indian River, which captured its 33rd women's and 40th men's NJCAA championships!
$036 \mid$ Top 10 Triumphs \& Tragedies by Chuck Warner

Beginning in its April issue and continuing monthly through January 2015, Swimming World Magazine is counting down the top 10 triumphs and tragedies in the history of swimming. This month: \#9 Rick DeMontRobbed of Two Olympic Gold Medals.

039 | Dryside Training: Underwater Speed by J.R. Rosania

Here are four exercises using a TRX Suspension Trainer that can help with your underwaters. You will strengthen your core and low back as well as your hamstrings.
$040 \mid$ Ask Dr. Shannon
by Shannon McBride

041 | Nutrition: Eating Just Enough
republished with permission of VeloPress from "Racing Weight Cookbook: Lean, Light Recipes for Athletes"

## 042 Q\&A with Coach Bruce Gemmell

 by Michael J. Stott$043 \mid$ How They Train Nation's Capital Swim Team (Georgetown Prep Site) Middle Distance Group
by Michael J. Stott

## DEPARTMENTS

$008 \mid$ A Voice for the Sport

045 | Up \& Comers

046 |Gutter Talk

048 | CSCAA All-America Teams

062 | For the Record

069 | Parting Shot

## ON THE COVER

Georgia won its second straight and sixth overall team title at the women's NCAAs. The Lady Bulldogs, led by Swimmer of the Meet Brittany MacLean and Diver of the Meet Laura Ryan, showed tremendous depth-all 15 of their swimmers and divers scored points, and they had five finalists in the 500 free, four in the 400 IM and three in the 200 free and 1650 free. (See story, page 20.) [Рното by Peter h. bick]


# Charles Keating Jr. \& II is Bitter Fruit 

BY BRENT T. RUTEMILLER
PHOTO PROVIDED BY UNIVERSITY OF CINCINNATI

Charles Keating Jr., passed away on March 31. His legacy within the sport of swimming will be forever polarized between those in Cincinnati, Ohio, who benefited from the construction of the Keating Natatorium, and those in Phoenix, Ariz., who benefited from his construction of the Phoenix Swim Club.

The Keating Natatorium was constructed in the 1970s with donations from Keating's successful businesses in Ohio. The Phoenix Swim Club facility was constructed in the late 1980s from Keating's illegal banking and construction activities.

It is somewhat ironic that the Phoenix Swim Club facility ended its life the same day that Keating passed away. Maybe it is divine justice. And maybe it is equally fitting that the Keating Natatorium in Cincinnati continues to thrive.

I have benefited from both spectrums of Keating's influence-first as a member of the Cincinnati Marlins, who practiced at the Keating Natatorium, and later as a member of the original coaching staff for the Phoenix Swim Club.

On both ends, Keating's vision for the sport of swimming had no peers. His support for facilities, programs and coaches produced multiple world-class athletes and Olympians over four decades. Throughout the ' 70 s and ' 80 s , a trip through Cincinnati and the Keating Natatorium was a rite of passage to elite competition. In the late '80s through the 2000s, the Phoenix Swim Club-built by Keating-was the place to train under blue skies and palm trees.

It might be hard to believe, but Keating's influence was beyond money. He set high goals for those he surrounded, and he expected those goals to be achieved. He had no patience for second best.

When I think of Charlie Keating, I am reminded of the famous words from Poet Robert Browning, who said, "Ah, but a man's

reach should exceed his grasp."
Keating always set goals higher than his own grasp. That, in a nutshell, is the simplest description of this complex man. The fact that he took huge risks with other people's money will forever be unforgivable. It was wrong that those risks hurt many people. But within the realm of sports, Keating was right to inspire others to take huge risks and set goals that exceeded their grasp.

Although his inspiration within swimming will never outweigh the financial loss for those who suffered from his collapsed financial empire, it is important to remember that there was much good that Keating generated during his life in the sport of swimming.

One thing nobody can ever argue is that the aquatic facilities that Keating built changed a lot of people's lives for the better.

Those who wish to donate in Keating's memory can do so to St Xavier in Cincinnati for the benefit of Keating Natatorium:

## St. Xavier High School - Keating Natatorium 600 W. North Bend Road Cincinnati, OH 45224 Attn: Development Office *



Brent T. Rutemiller
Publisher of Swimming World Magazine


## PUBLISHING, CIRCULATION AND

 ACCOUNTING OFFICEP.O. Box 20337, Sedona, AZ 86341

Toll Free in USA \& Canada: 800-511-3029
Phone: 928-284-4005 • Fax: 928-284-2477 www.SwimmingWorldMagazine.com

Chairman of the Board, President - Richard Deal DickD@SwimmingWorld.com

Publisher, CEO - Brent T. Rutemiller BrentR@SwimmingWorld.com

Circulation/Art Director - Karen Deal KarenD@SwimmingWorld.com

Circulation Manager - Maureen Rankin MaureenR@SwimmingWorld.com
Circulation Assistant - Judy Jacob Subscriptions@SwimmingWorld.com
Advertising Production Coordinator - Betsy Houlihan BetsyH@SwimmingWorld.com

EDITORIAL, PRODUCTION, MERCHANDISING, MARKETING AND ADVERTISING OFFICE

2744 East Glenrosa Avenue, Phoenix, AZ 85016 Toll Free: 800-352-7946
Phone: 602-522-0778 • Fax: 602-522-0744 www.SwimmingWorldMagazine.com

EDITORIAL AND PRODUCTION
Editorial@SwimmingWorld.com
Senior Editor - Bob Ingram Bobl@SwimmingWorld.com

Managing Editor - Jason Marsteller JasonM@SwimmingWorld.com

Graphic Arts Designer - Kaitlin Kelly KaitlinK@SwimmingWorld.com

Staff Writers - Michael J. Stott, Shoshanna Rutemiller
Fitness Trainer - J.R. Rosania
Chief Photographer - Peter H. Bick
SwimmingWorldMagazine.com WebMaster: WebMaster@SwimmingWorld.com

MARKETING AND ADVERTISING
Advertising@SwimmingWorld.com
Marketing Coordinator - Tiffany Elias TiffanyE@SwimmingWorld.com MULTI-MEDIA

Writer/Producer - Jeff Commings JeffC@SwimmingWorld.com

## INTERNATIONAL CORRESPPONDENTS

Africa: Chaker Belhadj (TUN) Australia: Wayne Goldsmith, Ian Hanson Europe: Norbert Agh (HUN), Camilo Cametti (ITA), Federico Ferraro (ITA), Oene Rusticus (NED), Steven Selthoffer (GER), Rokur Jakupsstovu (FAR), Tom Willdridge (GBR) Japan: Hideki Mochizuki
Middle East: Baruch "Buky" Chass, Ph.D. (ISR) South Africa: Neville Smith (RSA) South America: Jorge Aguado (ARG), Alex Pussieldi (BRA)

PHOTOGRAPHERS/SWTV
Peter H. Bick, USA Today Sports Images, Reuters, Getty Images


PUBLISHER: (1) SPORTS

 Fax. 288242

# XCELLERATOR Starine platorm FOR CHAMPION SW IM MERS 

- Custom logo options available for promoting your team
- Includes a track wedge and side rails for optimal swim starts
- Versatile H-style backstroke bar supports different gripping options
- Custom powder coating options available
- USA-S, FINA, NCAA \& NFHS approved

SPECTRUM
A PLAYCORE Company

## LESSONS WITH THE LEGENDS

## BY MICHAEL J. STOTT

SWIMMING WORLD
CONTINUES A SERIES IN WHICH TOP COACHES SHARE SECRETS OF THEIR SUCCESS. THIS MONTH'S FEATURED COACH: BOB GROSETH.

Fenwick High School, where his teams won seven consecutive Catholic League and four National Catholic Championships. Stops at Cincinnati, Tulane and Iowa State preceded his arrival at Northwestern to take over a moribund Wildcat program that had finished last in the

By his own admission, Bob Groseth was not a great swimmer, but someone who came to be regarded as a coach to the coaches. While Dix Keyser at Hinsdale Country Club inspired Groseth to be a coach, it was as Hinsdale High School and Indiana University team manager that he learned some finer points of coaching. Doc Counsilman was a mentor and "the most curious man I have ever known," says Groseth. "My sophomore year, he started writing,'The Science of Swimming.' Every month was essentially a seminar as experts in physiology, biomechanics and psychology would spend time at practice. Every Sunday, he would film swimmers. The grid lines on the old Counsilman films were drawn by me.
"Doc always had time to talk to other coaches. That is the culture we have in swimming in the U.S. I was helped by Doc, but George Haines, Peter Daland and others were willing to share their time and knowledge with a young punk like me. I consider helping other coaches a responsibility. I have been lucky to have some great assistants." Swimmers Nick and Eric Hansen and Monty Hopkins went on to coach. Fresno State's Jeanne Fleck and Bolles’ Sergio Lopez ("one of the best")two former Groseth assistants-are among those who honed their craft under his watchful eye.

From Indiana, Groseth went to Chicago's

Big Ten in each of the 11 prior seasons. A new pool, local success from area summer league swimmers and the influence of women's coach Kathy Wickstrand Gahen sped a positive perceptual change about Northwestern aquatics. Gradually, the Wildcats began moving up in the Big Ten and NCAA standings, thanks to NCAA record holders such as Matt Grevers, Mike Alexandrov, Bruno Barbic and Kyle Bubolz. In 2005, Groseth was named NCAA Cocoach of the Year.

Groseth's influence gained greater traction after succeeding Phillip Whitten as executive director of the CSCAA. "Phil brought legitimacy to the CSCAA after years when most coaches considered it irrelevant," he says. "He defended programs that were being dropped by directly criticizing the school and athletic administrations, and he developed a program to help coaches protect their programs. The CSCAA Board of Directors hired me to improve the organization. I used my relationships with coaches to get the top Division I, II and III coaches involved. I convinced the board to hire Greg Lockart to take over the business end and raise the revenue stream. Getting Mark Bernardino, Kirk Sanocki and Bill Wadley, among others, involved was a first step, as was convincing Chuck Knoles to continue as treasurer and utilizing Joel Shinofield's administrative skills.


PICTURED > BOB GROSETH, A 2013 ASCA HALL OF FAME INDUCTEE AND BOB OUSLEY AWARD RECIPIENT, HAS COACHED HIGH SCHOOL AND COLLEGE ATHLETES (CINCINNATI, TULANE, IOWA STATE, NORTHWESTERN) FOR 40 YEARS. SUBSEQUENT TO RECEIVING THE COLLEGE SWIM COACHES ASSOCIATION OF AMERICA ROBERT E. STEADMAN AWARD, HE SERVED AS THE ORGANIZATION'S EXECUTIVE DIRECTOR.
"I promised the CSCAA three years as executive director. When my term ended, I was able to land at Libertyville High School, which needed a coach. Last season in my first year with the team, we were fourth at the state meet after finishing 31st the year before." And at the 2014 IIlinois High School Championships, Libertyville finished second,123-120, to University High School of Normal, IIL.
"We swam great," says Groseth. *

Michael J. Stott, one of Swimming World Magazine's USA contributors, is based in Richmond, Va.


# 2014 SUMMER UGLIES IN STORES NOW! 

## AN OLYMPIAN'S GUIDE TO

 BACKSTROKE STARTS BY JEFF COMMINGS • PHOTOS BY CHRISTOPHER RATTRAY

WATCHING THE PERFECT BACKSTROKE START IS LIKE WATCHING ART IN MOTION. WHEN DONE WELL, THE SWIMMER LAUNCHES INTO the race with as little splash as possible-As if he were a DIVER TRYING TO SCORE A PERFECT " 10 ." ALTHOUGH HE SAYS HIS 6-8 FRAME OFTEN PUTS HIM AT A DISADVANTAGE, MATT GREVERS KNOWS HOW TO MAKE THE MOST OF HIS START, MAKING SURE HE'S ONE OF THE LEADERS WHEN HE BREAKS OUT AT THE 15-METER MARK.


Matt Grevers is the reigning Olympic and world champion in the 100 meter backstroke. At the 2012 Olympic Trials, he swam the second-fastest time in history, posting a 52.08. Grevers also won the silver medal in the 100 back at the 2008 Games and was a member of the 400 freestyle relays at the 2008 and 2012 Olympics.

## (1) TAKE YOUR MARK

Only a few years ago, the conventional wisdom for the backsroke start was to curl into a tight ball on the "take your mark" command. Not anymore. These days, backstrokers keep the head in line with the spine, and the back almost vertical. The elbows are bent, bringing the body into position for a great leap into the start.

## (2) EXPLODEEROMTHEWALL

Grevers says the next phase of the start depends on pool conditions. International meets have touchpads that extend more than a foot above the surface, and rules allow foot placement above the water surface. A higher foot placement allows for more "air time" on the start, and Grevers uses the high foot position to push away from the starting block. If the touchpad does not extend above the water's surface, he keeps his feet below the surface. When the horn starts the race, he explodes, pushing up and back to get his entire body over the water and execute a clean start.



## (3) ARCHTHE BACK

Once the arms are extended over the head and toward the water, the back should arch to ensure a clean entry. The flatter the back, the sloppier the start. Also, remember to keep the head in line with your body. Do not throw it so far back that you can see the other side of the pool. That will cause you to enter too deeply.

## (4) ENTRRCLEANLY

If your back is properly arched, your body should fit perfectly into the "hole" you made in the water where your hands entered. Many swimmers tend to kick their legs too hard to help get them over the water. Don't waste the energy. If you pushed back hard at the start, arched your back and entered the water cleanly with your hands first, the natural progression of the body will clear your feet and create a clean entry.

## (5) NOTTOODEEP!

Grevers says he goes about five feet deep on the entry, giving him time to do the eight or nine dolphin kicks he needs to get him to the 15-meter mark, the maximum underwater distance allowed. Regular practice will help you determine the best depth for your start.

## (6) DOLPHIN KICK

Make your underwater dolphin kicks quick and strong. Don't lose the explosive power you created on the start with lazy dolphin kicks! If you are trying to get all the way to 15 meters, make sure to have a coach or teammate standing right at the 15-meter mark to judge how far your dolphin kicks take you. *


# BASKETBALL. FOOTBALL. CANNONBALL. WHICH SOUNDS THE MOST FUN TO YOU? 



## nand

## 80 \%itmensis

don't consider continuing in the sport of swimming for their child after swim lessons.

## swim teams

can update their team info at swimtoday.org


SWIMTODAY.ORG


Until they try swimming.

## \#funnestsport IS THE HASHTAG YOU SHOULD USE

(yeah, we know it's not really a word, but it feels awesome to soy it over and over.)
parents ask their friends \& family (not Google)
where they ought to swim. THIS is where you send them.

C-M
o = © SI) numbity


WHAT ARE THE ELEMENTS IN PICKING AN AGE GROUP PROGRAM?
"It is a simple question with a complicated answer," says Norris Baker, a career school administrator in Charlotte, N.C., and parent of Kathleen Baker, 13-14-yearold national age group record holder (100 yard backstroke, 52.87) and four-time medalist at the 2013 FINA World Junior Championships.
"If you are choosing a swim program initially, you want one with some flexibility in the introduction to swimming. One that focuses mostly on technique and drills is critical because so much of the teaching is aimed at making competitive swimming enjoyable," he says.
"Hopefully, a beginning program will teach a child to love the sport and offer a team experience that has social connections and activities outside of swimming. Ideally, there should be progressions for advancement and a supporting culture within the team, so if the child wishes to move up the program, the club will support the swimmer on a variety of levels.
"The considerations are the same as choosing a neighborhood or a school," says Baker, adding that a culture of excellence, high character and healthy coach interac-
tion are often signs of superb coaching.
David Marsh, CEO and director of coaching at SwimMAC (Charlotte, N.C.), points to North Baltimore Aquatic Club as "perhaps the ultimate example of where the expectation is excellence. They have only 300 people on their whole team, but if you want to join, you better have an AAA time."
At SwimMAC, Marsh oversees a spectrum of offerings from Learn-to-Swim to international high performance training.
"For most 7-to-9-year-olds, the initial program of choice is the one within five miles of one's home," he says. "But going forward, it is critical that a program be lined up with your values, offer scheduling flexibility and is clear on attendance expectations. This is especially true if the child embraces the sport," he says, "because when that happens, parents need to ask, 'Where is the place that will give my child the trajectory and the progressive technical steps needed at the right age?"'

## QUESTIONS TO CONSIDER

When all is said and done,"Parents often choose programs based on location, cost, convenient practice hours and peers-that is, 'Does my child already have friends on a team?'" says Jessica O'Donnell, head age
group coach at Mesa (Ariz.) Aquatics Club. The questions she wishes parents would ask are:

IS THIS A PROGRAM IN WHICH MY CHILD CAN GROW? Some programs are very dominant at the 14-and-under level, but once those swimmers get to high school, are those phenoms still progressing at the same rate?

IS THE TEAM KNOWN FOR DEVELOPING ITS OWN ATHLETES? OR, DOES IT RECRUIT SWIMMERS FROM OTHER TEAMS? There is much to be said for creating a pool of talented, well-rounded swimmers rather than relying on someone else to grow your swimmers.

WHAT IS THE TEAM'S TRAINING PHILOSOPHY? Some training programs produce results right now, while others take a longer perspective, focusing on success in college when the swimmer reaches physical maturity. Which approach would be most beneficial for your child?

WHERE DO THEIR SWIMMERS GO TO COLLEGE? Are the coaches helping send swimmers to academically solid universities or just wherever they can get swimming scholarships? Not everyone is a Missy Franklin or Ryan Lochte, courted by every top 25 college program in the nation.

WHAT IS THE COST? Instead of looking for the cheapest program, consider where the extra cost might be helpful to your swimmer. Are the swimmer-coach ratios smaller, so the cost is higher because they pay an additional assistant, giving your swimmer more feedback in each practice?

WHAT ABOUT LONGEVITY? Generally, programs tend to be more stable when coaches in leadership positions have been with the team for longer periods of time. If a program has a new coach, find out how long his or her predecessors were there.

## STEPS TO TAKE

Jeremy Boone is a sports performance consultant and owner of athletebydesign. com. He has worked with individual athletes, SwimMAC and a number of professional sports teams (Carolina Panthers, WUSA Atlanta Beat, NASCAR pit crews, et al.). His books, "Coach Your Best" and "Parent Your Best," address fundamental issues of children and sports.

Once you have found a program whose core values regarding development, ex-

pectations and quality of experience are aligned with your own, Boone suggests that, as parents, you take the following steps:

VISIT AND OBSERVE A PRACTICE. Ask yourself if the training environment is consistent with what you want. What feeling do you get when you observe the practice? Is it all about swimming a high volume of laps while the coach passively stands on deck, or is there active teaching?
SET UP A MEETING WITH THE COACH TO GET TO KNOW HIM OR HER. Is the coach certified? What other credentials does he/ she have? Is it a positive team setting in which the coach is encouraging and engaging? Do you find the coach inspirational?
TALK TO THE PARENTS OF SWIMMERS IN THE PROGRAM YOU ARE CONSIDERING, OR HAVE YOUR CHILD TALK TO THE OTHER SWIMMERS. Ask what it's like to swim for the coach. What do they love most about the program? What do they dislike?
CONSIDER THE DRYLAND PROGRAM. Does it address the demands of swimming while also considering the age-specific needs of each child?
THINK ABOUT THE FINANCIAL REQUIREMENTS FOR THE PROGRAM. Can you afford
it? Is there financial assistance? INQUIRE ABOUT THE TEAM'S TRAVEL SCHEDULE. Are there travel issues? If so, does this affect other children in your family in terms of scheduling?

CONSIDER THE CHILD'S PERSONALITY. IS she introverted? Does he need a lot of encouragement? Is she a perfectionist? Does he enjoy challenges? Is she a risk-taker who fears failure? Does he like to compete in everything he does?

FIND A COACHING STYLE THAT SEEMS TO FIT BEST FOR YOUR CHILD. Be sure to ask your child what he wants out of a swimming program or what she wants to achieve.

## FUN AND ENJOYMENT

Bottom line? "I think swimming needs to be enjoyable-especially at the introductory stage," says Baker. Regardless of how well organized the program may be, swimming needs to be fun for the young swimmer. *

Michael J. Stott, one of Swimming World Magazine's USA contributors, is based in Richmond, Va. Next month, Stott will provide "A Parent's Guide to Changing Age Group Programs."



FIGURE $1>$ (ABOVE) THIS SWIMMER BEGINS HIS BUTTERFLY ARM MOTION BY MOVING HIS HANDS LATERALLY. THE VERTICAL GRAY LINES ON THE FORCE CURVES ARE sYNCHRONIZED WITH THE VIDEO IMAGES.

FIGURE 2 > (BELOW, LEFT) WITH A TYPICAL HOURGLASS-SHAPED HAND PATH, THE ARMS MOVE AWAY fROM THE BODY CENTERLINE TO EXIT THE WATER. THE LATERAL AND UPWARD MOTION OF THE HANDS AND LOWER ARMS PRODUCES CONSIDERABLE RESISTANCE.

FIGURE 3 > (BELOW, RIGHT) A TYPICAL BUTTERFLY HOURGLASS HAND PATH (LEFT) AND AN OPTIMAL HAND PATH (RIGHT) ARE GRAPHED WITH RESPECT TO THE BODY.


FIGURE $4>$ (ABOVE) LATERAL HAND MOTION TYPICALLY BEGINS AN INEFFECTIVE bUTTERFLY HAND PATH (LEFT PANEL). ELBOW FLEXION BEGINS AN OPTIMAL HAND PATH (RIGHT PANEL).


# HAND PATH 

BY ROD HAVRILUK

> MANY PEOPLE BELIEVE THAT THE TECHNIQUE OF THE FASIEST SWIMMERS IS WORTH COPYING. IN REALITY, EVEN THE FASTEST SWIMMERS HAVE TECHNIQUE LIMITATIONS, BUT THEY OFFSET THEM WITH STRENGTH AND CONDITIONING. THE PURPOSE OF THIS SERIES OF ARTICLES IS TO ADDRESS SCIENTIFICALLY THE TECHNIQUE MISCONCEPTIONS THAT HAVE BECOME "CONVENTIONAL WISDOM,"' AND TO PRESENT MORE EFFECTIVE OPTIONS.

Swimming Technique Misconception: In butterfly, the hand path is hourglass-shaped.

## LIMITATIONS OF THE TYPICAL HAND PATH

As in freestyle (Rod Havriluk, 2014), the hand path of an elite butterfly swimmer usually has a dramatically-curved shape. Examples of the typical hourglass-shaped path (graphed with respect to the water) can be found in numerous sources from James "Doc" Counsilman in 1968 to Ernie Maglischo in 2013.

Swimmers usually begin the underwater arm motion with a lateral hand motion (away from the body centerline), as shown in Fig. 1. While this hand motion begins to form an hourglass shape, it limits performance in measurable ways.

The main limitation of an initial lateral hand motion is most obvious when presented with corresponding hand force values (see Fig. 1, top left). The sideways motion of the hands generates a trivial amount of force for about one-quarter of a second. A swimmer who begins the pull with a lateral hand motion typically wastes a substantial proportion of the stroke cycle (about 25 percent) with the arms in a position that offers poor leverage and generates minimal force.

Another limitation of an hourglass-shaped hand path is evident at the finish of the push phase. As the arms begin to exit the water, they move laterally as they move upward. Underwater video often
shows that the hands exit the water about one foot away from the side of the torso (see Fig. 2, previous page, second from top, left). Why does this matter? There is considerable resistance on the hands and lower arms, which is not only fatiguing, but also slows the stroke rate.

## CALCULATION OF AN OPTIMAL HAND PATH

A recent study by Yohei Sato and Takanori Hino (2013) once again confirmed the findings of a number of research groups from the past 40 years. They measured the force produced by varying hand pitch angles. Their hand pitch data supports a fairly gradual hand-path angle with respect to the water ( 25 degrees) to generate maximum propulsion. Because the hand moves back farther with respect to the body than the water, the optimal hand path angle with respect to the body is even more gradual.
The resulting optimal hand path with respect to the body requires three gradual angles to maximize force. The shape is much less like an hourglass than the typical hand path (see Fig. 3, previous page, second from top, right). However, the similarity in the changes of direction (away, toward and away from the body midline) cannot be ignored. An optimal path is best achieved by not trying to trace an hourglass, regardless of the fact that there is some similarity in the shape. The initial arm motion at the beginning of the pull is critical to achieving an optimal hand path.

## TECHNIQUE ADJUSTMENT TO OPTIMIZE THE HAND PATH

The wasted motion at the beginning of the pull (that begins the typical hourglass hand path) can be avoided by controlling the initial backward arm motion. An optimal path results from initiating the pull with elbow flexion (see Fig. 4, bottom of previous page, right panel), as opposed to lateral hand motion (left panel).

If elbow flexion begins as soon as the arms begin to move backward, the leverage improves rapidly. A swimmer can make this adjustment more quickly and more precisely by using visual information. With an optimal head position and arm entry, the beginning of the pull is within the swimmer's field of view. It is essential to track the beginning of the pull visually to maintain the hands closer to the body midline than the elbows.
Elbow flexion not only minimizes wasted effort, but it also positions the arms with better leverage to increase force immediately (see Fig. 5 at right, top). A comparison of the beginning of the force curves for the male and female shows a dramatic difference in slope. A comparison of the female with the biomechanical model (Fig. 4, right panel) shows a remarkable similarity in the elbow angle.
The improved leverage makes a noticeable difference in hand force generation. After one-quarter of a second, the 14-yearold female in Fig. 5 is generating 10 pounds of force, while the 20 -year-old male in Fig. 1 is generating only 4 pounds. It is unlikely that the 125 -pound female is stronger than the 160 -pound male. Instead, the difference can be explained by the fact that the female is effectively using her technique to take better advantage of her strength.
In addition to greater force from elbow flexion at the beginning of the pull (Fig. 5, top), an optimal hand path maintains the hands beneath the legs for greater force on the push phase. The swimmer
increases her hand force to a peak as her hands push backward beneath her legs. An optimal hand path on the push phase also maintains the arms closer to the torso to minimize resistance on the exit. *

Dr. Rod Havriluk is the president of Swimming Technology Research (Tallahassee, Fla.). He also presently serves as president of the International Society of Swimming Coaching. He can be reached at the STR website: www.SwimmingTechnology.com.

Swimming World readers are encouraged to visit www. SwimmingWorldMagazine.com regularly to read more of Dr. Havriluk's articles on swimming technique misconceptions.

## SUMMARY The typical butterfly hand path begins

 with lateral hand motion and is hourglass-shaped. In contrast, an optimal path begins with elbow flexion and is shaped with very gradual angles. The initial elbow flexion rapidly improves leverage and the ability to generate force. A swimmer can visually monitor the pull phase to make sure that the hands stay closer to the body midline than the elbows.
figure 5 > (above) this swimmer begins her pull with elbow flexion and immediately increases her hand force (top). she achieves her peak force AS SHE FINISHES HER PUSH PHASE WIth her hands mOVing backward beneath her legs.

# WE DIDNT SEE THAT COMING <br> STORY BY JASON MARSTELLER • PHOTOS BY PETER H. BICK 




MINNEAPOLIS, MINN.-The most-hyped storyline heading into the women's NCAA Division I Swimming and Diving Championships, March 20-22, was the debut of four-time Olympic gold medalist Missy Franklin, who was a sure bet to lead the University of California to its fourth team trophy in the last six years.

Not so fast! Georgia had plans of its own and proceeded to run away with the team title-its second straight-defeating Stanford, 528 to 402.5, with Cal finishing third (386).

The Lady Bulldogs dominated the meet with their depth-all 15 of their swimmers and divers scored points, and they had five finalists in the 500 free, four in the 400 IM and three in the 200 free and 1650. Georgia also had impressive top-end performances from Swimmer of the Meet Brittany MacLean and Diver of the Meet Laura Ryan, who both won two events.

Head coach Jack Bauerle officially gets credit for Georgia's sixth women's team title-moving him to second all time behind Richard Quick's 12 wins at Texas, Stanford and Auburn. However, Bauerle wasn't at the meet.

On Jan. 4, the University of Georgia suspended Bauerle from attending competitions due to his involvement in an "academic eligibility matter." He was still allowed to coach his team in practice, but he couldn't be on deck with the team at home meets nor could he accompany the team to away meetseven at his own expense.

Instead, it was Senior Associate Head Coach Harvey Humphries-in his 33rd year as a coach at Georgia-who was on deck at Minneapolis.

No matter...the Lady Bulldogs took charge early and kept piling on the points throughout the meet.

Editor's Note: Two weeks after the women's championship, Georgia suspended Bauerle indefinitely following NCAA accusations of severe breach of conduct and for providing extra benefits to a Georgia swimmer (thought to be Chase Kalisz). Humphries was serving as acting head coach until the allegations were resolved. At press time, the story remained ongoing (see www.swimmingworld.com for further updates).

## GEORGIA EXPRESS

After a third-place finish in the 200 yard free relay, Canadian distance ace MacLean kick-started the Georgia Express in the meet's second event when she overpowered Franklin on the final 50 of the 500 free ( 25.81 to 26.45 ) to win by 13 -hundredths, 4:32.53 to 4:32.66. Both times were under Allison Schmitt's NCAA record (4:32.71) from 2011.

However, most everyone had expected Franklin to win the 500-and, in fact, win all of her races-and even challenge Katie Ledecky's American record of

- continued on 22


## WOMEN'S NCAAs - continued from 21

4:28.71. Instead, her first collegiate championship loss in an individual event proved to be a bad omen for Cal's team title hopes...and a portent of good things to come for Georgia.

MacLean, a sophomore, went on to win the 1650 in 15:27.84, breaking the NCAA record by nearly 10 seconds! Her 1000 split of 9:23.78 also bettered the NCAA mark. She added a fourth-place finish in the 200 free (1:43.30).

Ryan, a senior, scored 56 points in diving, returning to her age group diving facility in Minnesota. She closed out her collegiate career by finishing first in both springboard events and third on the platform.
The Lady Bulldogs ended the meet with five individual wins, as reigning Swimming World Magazine High School Swimmer of the Year Olivia Smoliga upset defending champion Margo Geer of Arizona (third, 21.73) in the 50 free (21.59).

## NERD NATION SHINES

Stanford, which has embraced a new moniker as Nerd Nation in its social media interactions with the hashtag, \#nerdnation, seemingly came out of nowhere to finish second in the team standings. After all, the Cardinal only returned eight scorers from last year's team that placed eighth!
But this year, they won four out of five relays and had some stand-up performances from Felicia Lee and Maya DiRado.
Just like Tennessee did a year ago, Stanford won its first three relays: Maddy Schaefer, Lia Neal, Lee and Katie Olsen topped the 200 free in 1:26.23; then DiRado, Olsen, Lee and Neal set an NCAA/American record in the 400 medley (3:27.51); and Lee, Olsen, Nicole Stafford and Schaefer followed with a 1:34.95 to win the 200 medley. On the meet's final day, the Cardinal stroked to its fourth relay win as Schaefer, Lee, DiRado and Neal clocked 3:10.83 to take the 400 free relay.
Meanwhile, seniors DiRado and Lee were firing on all cylinders.

DiRado, who, like MacLean, had two individual wins, challenged for Swimmer of the Meet honors, but she couldn't overcome MacLean's NCAA
record swims. DiRado swept the 200400 IMs in 1:52.50 and 3:58.12, and placed second in the 200 fly (1:52.99).
Lee, a longtime team leader, demonstrated that she was fully recovered from shoulder surgery that claimed part of her junior season. Coming into the meet, though, there were still some questions as to how fast she could be in her specialty event, the 100 fly. She didn't leave any doubts, responding with a 50.89 victory in her final collegiate championship meet.

## LONG-AWAITED COLLEGIATE DEBUT

Missy Franklin: four Olympic gold medals, one bronze; nine World Championship gold medals, three silver, one bronze; world record holder, American record holder; Swimming World's World and American Swimmer of the Year (2012); FINA Swimmer of the Year (2011, 2012).
And all this before she even took her first stroke as a collegiate swimmer.

Hey, admit it: everyone was excited about Franklin's debut at the women's NCAAs.
But when Coach Teri McKeever hit the jackpot and signed the superstar to come to Cal, Franklin announced that she would swim at the NCAA level for only two years before turning professional and focusing on the 2016 Rio Olympics.
With Franklin having such a short college shelf-life, swimming fans around the world were still looking forward to two years of epic battles in the backstroke, knowing the Golden Bears had two more world-class back-strokers-Rachel Bootsma and Elizabeth Pelton-who would be training with Franklin at Berkeley.
But McKeever had a different plan for her star. She knew the team could score heavily in backstroke without Franklin, so she had her focus on freestyle and relay duty.
After her surprising loss in the 500 on Day 1, she then watched as Cal's 200 medley relay was disqualified for an early take-off on the second leg in the first prelim event of Day 2. The DQ seemed to demoralize the Golden Bears, as they were well aware that

- continued on 24




## BRITTANY MACLEAN'S FAVORITE SETS

BY JEFF COMMINGS
Brittany MacLean could be forgiven for having a slight sense of trepidation about Monday and Thursday afternoon workouts at the University of Georgia.
"Those are our big threshold (days), and they challenge us mentally as well as physically", she says. "I say 'mentally' just because it is hard to keep a positive attitude, knowing what you are about to endure-even when your body feels like it wants to give up."

The hard work paid off: MacLean won both distance freestyles at the women's NCAA Division I Swimming and Diving Championships, breaking the NCAA record in the 1650 yard free by 9.22 seconds. She attributes the following workout (short course yards) to helping her win her first NCAA titles:

## WARM.UP (ABOUT 2,000 YARDS)

## MAIN SET: $22 \times 300$ AS FOLLOWS

4 rounds of: $1 @ 3: 30,1 @ 3: 20,1 @ 3: 10,1 @ 3: 00$ (with an extra 300@3:00 added on at the end of the 2nd through 4th rounds):

Round 1: 1@3:30,1@3:20, $@ 3: 10,1 @ 3: 00$ Round 2: @3:30, $1 @ 3: 20,1 @ 3: 10,2 @ 3: 00$ Round 3: 1@3:30, $@ 3: 20,1 @ 3: 10,3 @ 3: 00$ Round 4: @@:30, @3:20, @3:10, 4@3:00

## WARM-DOWN (ABOUT 2,000 YARDS)

"The goal was to hold a best possible average, while making all the intervals," says MacLean. "Each round gets more challenging as the wear on your body increases.
"These are definitely longer workouts than I used to do before coming to Georgia, but having such an incredible training group filled with some of the best swimmers in the world to challenge you every day makes it very manageable."
Another great main set that came to mind was $2 \times 3,000$. The first 3,000 is a negative-split swim "to set you up to race on the second one," the goal being to race an all-out 3,000 at the end.
"There is no place in these sets for the faint of heart," says Harvey Humphries, Georgia associate head coach."Brittany handles the overall program maybe better than any other female that I have ever coached so far, but I do think that Wendy Trott at this point was a little better than Brittany on the long duration with short-rest sets. I feel very privileged to have been able to work with so many talented and tough athletes who handled what the Bangles (may have had in mind when they sang), 'Just Another Manic Monday." *

## WOMEN'S NCAAs - continued from 22

their chances of winning the team race had just been dealt a severe blow.

Franklin tried to pick up the team's spirits with two spectacular performances that night in the 200 free and 800 free relay, but Cal was never able to recover, finishing 142 points behind Georgia.

She first demolished the 1:41 barrier in the individual event with an NCAA/ American record of $1: 40.31$ ! If that weren't enough, she "Lezaked" the field in the 800 free relay by overcoming a 2.5 -second margin with a mind-boggling 1:40.08 anchor, as Cal's Rachael Acker, Caroline Piehl, Pelton and Franklin won the event in 6:54.94.

That relay leg was definitely reminiscent of Jason Lezak's incredible anchor in the 400 free relay at the 2008 Beijing Olympics that tracked down France and kept Michael Phelps' pursuit of eight gold medals alive.
Franklin closed out her individual events with a third-place 47.26 in the 100 free on the final night.

## A RARE DISTINCTION

One of the more entertaining subplots of the meet came from San Diego State's Anika Apostalon, who was involved in not one, not two...but three swimoffs during the meet! And...she won all three!
The first day's events provided the most interesting story. Not only did Apostalon tie Texas' Ellen Lobb for eighth place in the 50 free, but her SDSU squad also tied Indiana for 16th in the 200 free relay.
That set up the possibility for the two-sport star (Apostalon also competes in water polo) to swim back-toback 50s.

However, some uncommon common sense prevailed at the end of the first session. San Diego State had planned to swim Apostalon as the leadoff swimmer of the 200 free relay, but instead of having her swim the relay leadoff and the 50 swimoff minutes later, Apostalon was able to swim "two races in one" when Lobb was allowed to swim in a third lane next to Apostalon. Not only did she beat Lobb, but her SDSU teammates beat Indiana.
The next day,Apostalon tied Denver's

Sam Corea for 16th in the 100 back... and, sure enough, she remained unbeaten in all three of her swimoffs!
"I haven't been keeping track, and l'm taking them one at a time," Apostalon said when asked about how many swims she had in Minneapolis. "'m glad (the swimoffs) went down the way they did, and I'm glad I got that experience."

## BEST OF THE REST

- Texas A\&M captured a trio of NCAA titles: Breeja Larson clipped her NCAA/American record in the 100 breast (57.23), while Cammile Adams defended her 200 fly title (1:52.25). Paige Miller won the 100 back (50.77).
- After Notre Dame's Emma Reaney had snatched Larson's NCAA/ American record from her at the ACC Championships with a 2:04.34, many people anticipated an exciting showdown between the two at NCAAs. It never materialized-Reaney lowered her records to 2:04.06, winning by nearly two seconds over Larson, who tied for second with Stanford's Katie Olsen (2:05.88). The victory was Notre Dame's first-ever NCAA title.
- After suffering an upset in the 50 free to start the meet, Arizona's Margo Geer bounced back to win the 100 in 47.10 after posting a sizzling 47.00 during prelims.
- The biggest surprise of the meet came in the 200 back. Cal's Elizabeth Pelton asserted herself last year as the fastest 200 yard backstroker ever with a 1:47.84 victory in her freshman season. She was expected to challenge the 1:47 barrier this year, but Indiana's Brooklynn Snodgrass came away with the win in 1:50.52-3-hundredths faster than Pelton. Snodgrass was mobbed by her teammates as soon as she exited the pool.
- USC's Haley Ishimatsu defended her platform diving title with 365.15 points to become the first diver to win the 10-meter in back-to-back years since Stanford's Eileen Richetelli won in 1992 and 1993! In fact, it's only happened three times: BYU's Courtney Nelson accomplished the feat in 1990 and 1991. *



Ron Zolno of the South Texas LSC started officiating in summer league and has worked tirelessly as a USA Swimming official for more than 16 years. He is a great mentor with a wealth of experience and is always willing to share his knowledge and sound advice. His passion to improve the sport led him and his wife to organize a Swimposium for officials, coaches and swimmers in San Antonio in October 2012. Zolno has officiated and has been an evaluator at numerous meets, including junior and senior nationals, Grand Prix and the Charlotte UltraSwim-and he has even officiated in Israel! Zolno, who currently holds N3 certifications for stroke and turn, chief judge, starter and referee, has also been the officials chair for South Texas and continues to serve as a member of the LSC's board of directors. He is also involved with NCAA and high school swimming, often serving as the meet referee.


MAXWELL
MEDALS \& AWARDS

## PROUD SPONSOR OF THE MAXWELL EXCELLENCE AWARD

Call for your free full-color Maxwell catalog: 1.800.331.1383

# COLLABORATE YOUR WAY 로TO A SOLUTION... 

Or How Dol Find the Best Answer to Those Situations that Happen at a Meet?

BY AMY HOPPENRATH - PHOTO BY PETER H. BICK

No matter how experienced we are as officials, swim meets always seem to present us with a new situation-everything from a "Snow-mageddon" rolling in during the last day of a championship meet to having more swimmers than you can accommodate during time trials. As a referee, you always want to find the best solution for the athletes.

Here are some problem-solving techniques you might want to consider:

BRAINSTORM with the senior officials at a meet. Have they ever had a situation like this? What do they see as potential solutions? Use this group to help you develop something that might work.

COLLABORATE WITH KEY COACHES. Take a walk around the deck and chat with key coaches. What input do they have? What do they think of your solutions? They always have the athlete's best interest in mind and can provide you with a fresh viewpoint.

USE YOUR CONTACT LIST. Call your officials chair, a previous evaluator/mentor or a senior referee in your LSC to get their feedback.

DON'T FORGET THE OBVIOUS. Check with the facility, meet director, etc. Do they have any rules or procedures that will predicate how you handle the situation? Do they have the resources to implement your plan?
After you've had the chance to look at several solutions, use your fact-finding mission to help you determine the best decision that works not only within the rules, but also adheres to the meet program.
Finally, before you put your plan in place, don't forget the importance of communicating your plan. Will you need to have a coaches meeting? Are you prepared for the questions they might have? What do you need the announcer to communicate? Should you put something on the website...or develop a flyer?

The next time you are presented with a new situation...collaborate your way to provide the best solution for the athletes. *

Amy Hoppenrath is the officials chair of Missouri Valley Swimming and a member of the national officials committee.




# MORE THAN MEETS THE EYE 

STORY BY JEFF COMMINGS - PHOTOS BY PETER H. BICK

"CONTROVERY," "FABULOUS FRESHMEN" AND "BARRIER BREAKERS" WERE AMONG THE ADDITIONAL TOPICS OF CONVERSATION THAT ACCOMPANIED THE OBVIOUS STORV AT THE MEN'S NCAA DIVISION I SWIMMING AND DIVING CHAMPIONSHIPS: CAL CAPTURED ITS THIRD TEAM TITLE IN THE LAST FOUR YEARS!


AUSTIN, TEXAS-Very few championship meets run without controversy, and the men's NCAA Division I Swimming and Diving Championships started with whispers of technical foul play and ended with more than a dozen relay disqualifications that shredded pre-meet expectations in the team race.

While prognosticators predicted Florida and Michigan to be the main contenders for the 2014 title, it was California and Texas that took over the team battle early on. With help from a distance swimmer who moved up an astonishing 14 places from his seed, the Golden Bears were able to hoist their third championship trophy in four years, unseating defending champion Michigan, which finished fourth.

## "RESULTS ARE UNOFFICIAL"

A new rule approved by the NCAA rules committee put in place new protocols for verifying relay takeover disqualifications. While the electronic relay judging platforms placed on each starting block continues to be the first step in determining if the swimmer leaves the block before his teammate in the water touches the wall, more emphasis on human judging was instituted.

If one human judge does not concur with an early takeoff, video review using two stationary cameras is used. Most of the 16 disqualifications involving early takeoffs took place on the first day-12, to be exact-sparking knee-jerk reactions that the technology might not be functioning perfectly. Without substantiated evidence to prove malfunction, swimmers began easing back on their exchanges, and fewer disqualifications occurred on the final two days.

Arizona was likely the team that suffered the most from the disqualifications. The Wildcats were DQ'ed in the prelims of the 400 medley relay -an event they were heavily favored to win-when Kevin Cordes left the blocks 5-hundredths of a second early. The following day in the 200 medley relay final, Arizona finished second in the race, but that was stripped when officials determined that butterflyer Giles Smith had an early takeoff.

Fourteen schools were disqualified on relays in Austin. Virginia, Arizona and Alabama each notched two relay disqualifications during the meet.

## BREAKING BARRIERS

Nearly all of the air left the Lee \& Joe Jamail Texas Swimming Center when Kevin Cordes took his final stroke in the championship final of the 100 yard breaststroke. After a stunning 23.58 opening 50 -yard split, those in the building were hoping to see a sub-50-second swim from the Arizona junior.

Oh, so close. Cordes recorded a 50.04, breaking the American record of 50.55 that he swam in prelims. It was his third American record of the season, as his

- continued on 30


## MEN'S NCAAs - continued from 29

50.70 from December showed promise for a stellar NCAA Championships. Add in his 1:48.66 that lowered his 200 breast American record by 2 -hundredths of a second, and it's no surprise that Cordes was voted the Swimmer of the Meet by coaches in attendance.

Another swimmer expected to set an American record at the meet was Georgia sophomore Chase Kalisz. When he came within 9-tenths of Tyler Clary's mark in the 400 IM at the Southeastern Conference Championships, the only thing people were wondering during Kalisz's race at NCAAs was how far under the American record he would go.

By posting a 3:34.50, Kalisz knocked a huge 1.48 seconds off Clary's record.

He turned in third place after the first 100 yards of butterfly (50.04), but only trailed by 3 -tenths of a second. Then he threw in a fast 54.12 backstroke leg that put him in the lead at the halfway point by nearly one-and-a-half seconds.
Anyone who has seen Kalisz's previous 400 IM races at the elite championship level knows he is never in the lead after backstroke. "My backstroke has improved so much in the past year," Kalisz said. "That was my primary focus. My tempo was able to stay up the whole race. I don't think l've ever even been inside the top five (after backstroke in the 400 IM ). It was a real confidence booster."
Kalisz extended his lead by more than a second with a phenomenal 59.41 breaststroke split before finishing with a 50.93 freestyle leg for a 3.67 -second margin of victory.
The third American record of the meet came in the 200 medley relay, as Cal posted the win from lane 8 after sneaking into the finals by 9 -hundredths of a second. Ryan Murphy, Chuck Katis, Tony Cox and Tyler Messerschmidt each celebrated his first American record swim with a collective time of $1: 22.83$, beating the American mark of 1:23.02 set by the SwimMAC post-grad squad swum three months ago. The swim just missed Michigan's U.S. Open record of 1:22.27.
With Dylan Bosch representing South Africa internationally, he could not set the American record in the 200 butterfly, but his 1:39.33 will be the U.S. Open record for the fastest swim done in the

United States. Tom Shields and Michael Phelps had shared the U.S. Open mark for about a year when Shields posted a 1:39.65 last year to tie Phelps' 2007 swim.

## FANTASTIC FRESHIIEN

Not many freshmen win individual NCAA titles, so seeing three of them at the top of the podium this year was a rarity. Murphy came into the meet with expectations to win or be a strong challenger in the 200 backstroke, and he won that by more than a second with an NCAA record time of 1:37.35. That came within half a second of Ryan Lochte's American and U.S. Open mark, which is likely Murphy's goal for his sophomore year.
Not only did Murphy join a short list of winning freshmen, but he also became the first freshman since 2000 to win two individual swimming events. Anthony Ervin did that when he won the 50 and 100 freestyles just months before winning gold at the Olympics. Is it too early to start thinking similar Olympic glory for Murphy?
Not much was known about Kristian Gkolomeev before he tied for first in the 50 free with Arizona's Brad Tandy. The Alabama freshman had arrived on campus in Tuscaloosa from his native Greece just three months earlier and wasted no time in adjusting to short course yards racing. Though he had just missed cracking 19 seconds in the 50 free prelims with a 19.05, not many would have thought to include Gkolomeev in the conversation of likely winners, but he got the job done with an 18.95 to match Tandy's time.
"I didn't expect that I was going to win," Gkolomeev said after the race. "I'm so happy that in so short amount of time, I was able to do well."
Over in the diving well, Kristian Ipsen and Nick McCrory were the names many expected to dominate the headlines through the meet. But Michael Hixon stole the show with two springboard titles on the same diving boards he uses every day in practice. The freshman Longhorn's stature is on the rise in diving after competing at the World Championships last sum-

- continued on 32




## MEN'S NCAAs - continued from 30

mer, and he used the confidence from his time in Barcelona to notch two big wins for Texas.

By a margin of just 6.5 points over Ipsen, Hixon grabbed the win in the 1-meter event, then dominated on his specialty height, the 3 -meter springboard, to beat Arizona State's Riley McCormick by 44.8 points.

## BEARS RETURN TO THE TOP

"Who would have thought that a miler from Cal would be the one to make such a difference in winning a team championship?"

Those were the words head coach Dave Durden uttered after his team celebrated winning the meet by 51 points over Texas. Jeremy Bagshaw's incredible 1650 freestyle was, indeed, the moment that Cal fans-and even Texas supporters-felt clinched the meet for the Golden Bears. Seeded 16th coming into the meet, Bagshaw threw down an incredible 14:39.00 from an early heat and eventually placed second in the event behind Connor Jaeger's 14:29.27. That became a 16 -point boost for Cal in the first event of the final session.
Texas led by just six points after two days of competition, which Durden believed was perfect for his team.
"I felt if we were within 20 (after the second day), we were going to be fine," he said.

Murphy's sweep of the backstrokes and the 200 medley relay victory marked the only times California stood at the top of the podium, but the Bears used depth through all 16 places to earn 468.5 points and win the third championship title for Durden in four years.

If Texas had won, it would have marked an 11th championship for head coach Eddie Reese, and his first since 2010. A team victory would have tied Reese with Ohio State's Mike Peppe for the most men's team titles in history. Prognosticators had picked Texas to place no higher than fourth, but with nearly every swimmer performing much better than his seed times and placings from the first event to the last, the Longhorns exceeded just about everyone's expectations.

Florida and Michigan placed third
and fourth, respectively, after coming into the meet as pre-meet title favorites. Georgia's fifth-place finish was helped largely by putting swimmers into scoring position in 10 of the 13 individual events. Auburn moved up two spots from last year's placing to take sixth, while the double DQs dropped Arizona down to seventh. Southern California, Stanford and Indiana rounded out the top 10.

## BEST OF THE REST

- Marcin Cieslak and Joao de Lucca were other double individual event winners in Austin. Cieslak wrapped up his career as a Florida Gator by claiming the 200 IM in 1:40.58 and the 100 fly with a 44.87. The Poland native just missed the NCAA record of 1:40.49 posted by another Florida standout, Bradley Ally, in 2009.
"Florida is known for the 200 IM ," Cieslak said, "so it's good to keep the tradition going and bring the title back to Florida."
De Lucca, a Brazilian completing his eligibility for Louisville, successfully defended his 200 free title in a very competitive field, posting a 1:31.96. The following day, he won the 100 free with a 41.70, becoming the first man in 19 years to win both events at the NCAA Championships. Notably, that last man was also Brazilian: Gustavo Borges swept those events in 1995 for Michigan.
- Cristian Quintero has been on the cusp of winning individual titles for a few years. He finally collected one in his senior year when he took the 500 free in $4: 10.02$. Ditching the 1650 this year proved to be a wise decision, as he finished third in the 100 free (42.14) and second in the 200 free (1:32.28).
- Illustrating the importance of relays at NCAAs, Cal won three of the five relays offered. In addition to the record-setting 200 medley relay, the Bears also took the 200 free relay (1:15.27) and the 400 medley relay (3:02.66). Southern California won the 800 free relay with a 6:13.09, while a 2:48.33 helped Auburn win the final event of the meet, the 400 free relay. *



## CANT ANYON: BEAT THESECUISS?

BY JASON MARSTELLER

> THE SAME FIVE SCHOOLS-DRURV, EMORV, KENYON, OKLAHOMA BAPTIST ANDINDIAN RIVER STATE COLLEGE-REPEATED ASNATIONAL CHAMPIONSINTHER RESPECTIVE NCAADIVIIIONSIIIANDIII, NAIAANDNJCAA WOMENS SAND MEN'SMEETS. LEADINGTHEGROUPWAS DRURY'SMEN-WHO ERRNEDTHER 10th STRAIGHIDIITITLLE-ANDINDIAN RIVER, WHICH CAPIUREDITS 33RD WONEN'S AND 40THMEN'SNCAA CHAMPIONSHIPS!


PICTURED > (Top) DRUR's women's inem took home irs 5 th consecutive ncan Division ${ }^{1}$ TIILE; (MIDDLE) 2014 MARks druvr's "Decade of dominance," with BOTH THE MEN AND WOMEN TAKING HOME THE CHAMPIONSHIP TITLE; (RIGHT) MATT JOSA (LEFT), WITH COACH JEFF DUGDALE OF QUEEN'S UNIVERSITY OF CHARLOTTE (N.C.), WAS NAMED THE 2014 MEN'S NCAA DIVISION II SWIMMER OF THE MEET.


NCAA DIVISIONII CHAMPIONSHIPS GENEVA, OHIO • MARCH 12.15 WOMEN'S AND MEN'S TEAM CHAMPIONS: DRURY

Drury closed out what it has billed "The Decade of Dominance," as the men captured their 10th straight title and its women scored its fifth victory in the last six years at the NCAA Division II Championships in Geneva, Ohio at The SPIRE Institute.

The Drury men finished with 569.5 points, well ahead of Florida Southern's 361, while the Panther women tallied 486 to Wayne State's 419. That's Drury's 12th men's title and 10th women's crown since the Panthers transitioned from NAIA to NCAA II in 1994-95. Along with NAIA victories, Drury now has won 21 men's and 13 women's team titles with Coach Brian Reynolds at the helm of all but one of those triumphs.

The men's winner appeared to be a lock even before the meet began, considering Drury's depth. Its women, however, had a much more difficult battle with Wayne State.

One of the biggest stories of the meet, however, came from Queens University of Charlotte (N.C.), which started its swimming program just four years ago. The Royals took third on the women's side and fourth among the men, who were led by Swimmer of the Meet Matt Josa.

The freshman star, who turned down NCAA Division I scholarships to remain home and also train with his club at SwimMAC Carolina, won all three of his individual events (200 back, 100 fly and 200 yard IM) with NCAA DII records, adding another two records in relay duty. He took down the 200 free record leading off the 800 free relay and was a part of Queen's record-setting 400 medley relay squad.

Meanwhile, Kitty Fischer from West Chester earned the Female Swimmer of the Meet award with wins in the 200 free and 200 IM (NCAA II record). She also was runner-up in both the 100 and 200 breaststroke.

Reynolds won the Men's Swimming Coach of the Year, while Wayne State's Sean Peters earned the same honor for women. Kristin Day of Clarion University was named Female Diver of the Year along with teammate Heath Calhoun, who won the Male Diver of the Year award. Clarion's Dave Hrovat was named the Diving Coach of the Year for both women and men.

- continued on 34


PICTURED > (TOP LEFT) 2014 MEN's NCAA DIVISION III CHAMPIONS, KENYON UNIVERSITY; (ABOVE) HUGH ANDERSON OF MARY WASHINGTON; (LEFT, SECOND FROM TOP) 2014 WOMEN'S NCAA DIVISION III CHAMPIONS, EMORY UNIVERSITY; (BELOW) JOHNS HOPKINS' ANASTASIA BOGDANOVSKI (RIGHT) WITH COACH GEORGE KENNEDY.


PICTURED > (BELOW) 2014 NAIA CHAMPIONS, OKLAHOMA BAPTIST UNIVERSITY; (BELOW, RIGHT) DANIEL RAMIREZ FROM OKLAHOMA BAPTIST UNIVERSITY.


PICTURED > (RIGHT) INDIAN river state college won It's 40th CONSECUTIVE MEN'S title and 33rd consecutive WOMEN's title; (far RIGHT) INDIAN RIVER STATE COACH, SION BRINN, WHO WON NJCAA COACH OF THE YEAR, POSES WITH THE WOMEN'S SWIMMERS of the meet, yurie nakano and barbara caraballo.


## NCAA DIIISION III CHAMPIONSHIPS INDIANAPOLIS, IND. • MARCH 19-22 WOMEN'S TEAM CHAMPION: EMORY UNIVERSITY MEN'S TEAM CHAMPION: KENYON COLLEGE

With the team title on the line going into the final relay, the Kenyon men's team completed a come-from-behind victory to capture its 33rd NCAA Division III title in the past 35 years. Meanwhile, the Emory women clinched their fifth straight team title in dominating fashion, scoring 595.5 points to runner-up Kenyon's 456.5.

It was such an intense meet at the IU Natatorium, even the fire alarm went off just before the final set of awards was presented, forcing an evacuation of the entire building. After a 15 -minute delay that included fire engines showing up outside the House of Champions, Kenyon and Emory were given the opportunity for their team-title plunge.

Kenyon's men eked out an eight-point win, 480 to 472 , over Denison, overcoming a huge influx of diving points from Big Red plus a strong performance from Allen Weik, who won the 500 and 1650 yard freestyles. The Emory women relied on their depth, taking the title without winning a single relay.

Hugh Anderson of Mary Washington earned the Men's Swimmer of the Meet honor, winning the 200 fly and 400 IM (NCAA DIII record). He also took second in the 200 IM. Meanwhile, Johns Hopkins' Anastasia Bogdanovski nearly went undefeated, finishing with six first-place performances. She won the 50 free and 200 free before taking second in the 100 free. She also led JHU to victory in four relays: 400 medley plus the 200, 400 and 800 free.

Hopkins' George Kennedy (women) and The College of New Jersey's Brian Bishop (men) earned Swimming Coach of the Year awards, while Kenyon's Andy Scott (women)

and Denison's Russ Bertram (men) topped Diving Coach of the Year honors. Kenyon's Maria Zarka (women) and Tufts' Johann Schmidt (men) captured the Diver of the Meet awards.

```
NAIA CHAMPIONSHIPS OKLAHOMA CITY, OKLA. • MARCH 5-8 WOMEN'S AND MEN'S TEAM CHAMPIONS: OKLAHOMA BAPTIST UNIVERSITY
```

Oklahoma Baptist, which started its swimming program just three years ago, successfully defended its women's and men's NAIA championships. Coached by Dr. Sam Freas, the Bison men have won three straight titles, while the women have taken back-to-back crowns.

The men won 13 of the 20 events, tallying 900 points, while the women did the same, scoring 849 points. Olivet Nazarene (IIL). finished second among the men (485), while Savannah College of Art and Design (Ga.) was runner-up among the women (492).
Lisa MacManus and Daniel Ramirez captured Swimmers of the Meet honors for Oklahoma Baptist, while OBU's Kristen Brimage and Jarod Haynes were
named Divers of the Year. Ramirez was also named Swimmer of the Year, while Biola's Christine Tixier stopped an OBU whitewash of the awards by being named the female Swimmer of the Year. Olivet Nazarene head coach Scott Teeters was named men's Coach of the Year, while he also earned a part of the women's Coach of the Year award along with Brenau's Blair Bachman.

Six people won multiple individual titles during the meet: Joel Ax, SCAD (200, 500 and 1650 yard free); Kristen Brimage, OBU (one-meter and three-meter diving); Laura Galarza, OBU (50, 100 and 200 free); Courtney Hayward, Brenau (500 free, 400 IM), Christine Tixier, Biola (100 and 200 fly, 200 IM ); and Daniel Ramirez, OBU (100 free, 100 back, 100 breast).

Fourteen NAIA records were broken, with Oklahoma Baptist being responsible for 11 of them.

## NJCAA CHAMPIONSHIPS

 FORT PIERCE, FLA. • MARCH 5-8 WOMEN'S AND MEN'S TEAM CHAMPIONS: INDIAN RIVER STATE COLLEGEIndian River State College, swimming
in its home pool, extended its college championship winning streaks-the longest of any school in any sport-to 40 straight men's NJCAA crowns and 33 women's.

How dominant was The River? With new coach Sion Brinn at the helm, its women and men won 38 of the 40 swimming and diving events. The only events it didn't win were the two in which it didn't have any entrants: the men's 1-meter and 3-meter diving.

The women's team tallied 1,782 points for the win, outdistancing lowa Lakes (934). The men amassed 1,773 points, ahead of Darton (1,098).

Brinn claimed Coach of the Year honors, while IRSC's Alec Scott and Josh Oathout shared the Male Swimmer of the Year award, and Yurie Nakano and Barbara Caraballo did the same for females.

Nakano finished an amazing junior college career by going undefeated in all of her individual events and ending up with NJCAA records in four events. *

Total Access members can view results of these college championships in "For the Record" in Swimming World Magazine's online version.



BY CHUCK WARNER


If last month's \#10 story on Mark Spitz represents a gradual accession from outstanding age grouper to Olympic champion, this month's \#9 entry among the top 10 triumphs and tragedies in swimming history is better compared to launching a rocket ship into space...and it ignited in 1970.

Coach Don Swartz, age 24, was in search of a more effective method to train his team in Marin County, Calif. He'd grown weary of taking his swimmers to championship meets with what he described as "lead arms," and losing his best athletes to the Santa Clara Swim Club, located about 80 miles south down the San Francisco Bay.

The balance of quality and quantity in swim training has long been the most important and yet vexing challenge that all swim coaches face when designing their programs. Swartz emphasized a third factor: adaptation. He redesigned his program to cycle ultra demanding training days with relatively easy days.

Simultaneously, one of Swartz's swimmers-Rick DeMontpossessed the work ethic and talent to excel in this new system. Many of Rick's older competitors swam with choppy strokes, high turnover rates and weak kicks. But DeMont possessed the type of skill recently observed in Olympic distance champions Grant Hackett and Sun Yang. Rick's long stroke length was so beautiful to watch that his coach liked to say, "Rick danced with the water." He also coordinated a four-beat crossover kick that could turn into a turbo-charged six-beat kick, enabling him to first stalk and then eat up his competition-like a shark hunting dinner.

In 1971, at just 14 years old, Rick DeMont qualified for nationals. And barely half a year later at the '72 spring short course nationals,

Rick surprised the swimming world by finishing third in the 1650 yard freestyle. Early that summer, as Olympic Trials neared, Rick, now 16 , started winning the 400 and 1500 meter freestyle events at the major American meets.

Coach Swartz observed that Roger Bannister had run the first sub four-minute mile in track by running the second half faster than the first-known as "negative splitting." He reasoned that a swimmer-and most especially DeMont-might be able to be the first human to swim faster than four minutes in the 400 meter freestyle by incorporating the same strategy.
At swim meets, Coach Swartz and his Marin Aquatic Club seemed to be "of" the competition, but not "in" it. They had a buoyancy or joy about their experience that defied the intensity possessed by many of their competitors. No one typified that joy more than Rick himself, who often lit up with a wide grin across his face.
At the '72 Olympic Trials, Rick became the youngest member of the U.S. men's team when he qualified for the Olympics in the 400 and 1500, and broke the world record in the latter with a time of 15:52.91. He and Coach Swartz were overjoyed.
That joy turned to exaltation in Munich when Rick came from behind to defeat Brad Cooper of Australia in the 400 free by 1 -hundredth of a second in a time of 4:00.21. Tears flowed on the award stand as "The Star-Spangled Banner" played to honor Rick's achievement of winning gold for both himself and his country.

Within hours, though, Rick's bliss evaporated and tears of a different kind returned. One of the greatest tragedies in the history of competitive swimming began to unfold.

## ORIGINS OF DRUG TESTING

For years leading up to 1972's Munich Olympics, officials in many sports had become suspicious that athletes were gaining an advantage through the use of a variety of drugs-in particular, stimulants. In fact, four years earlier, the International Olympic Committee (IOC) had begun to dabble in drug testing. In 1972, the IOC required a urine test by a random sampling of athletes along with all medal winners. Unfortunately, the standards for what was a disqualifying test were vague.

Furthermore, determining whether banned ingredients existed within any substance required the help of a medical analysis. For example, Visine might "get the red out" of your eyes, but it also contained banned elements. So did Vicks throat lozenges as well as other common over-the-counter medications. Therefore, a medical commission made up of physicians was put in place to screen athlete's medications for banned substances.

Peter Daland, the USA's Olympic head men's swimming coach, had explained that any medications should be cleared by the medical staff. Rick was so young that he had yet to earn his driver's license, but he was also bright and had already skipped a grade in school. He listened carefully. He submitted his medical disclosure forms during team processing, having indicated that he was taking a prescription for his asthma. He reasoned that if there was anything in his medication that might not be within the standards of competition, the doctors would surely let him know.
And as Coach Daland later stated, "That was the doctors' job."

## A CHRONIC ASTHMATIC

Rick had been a chronic asthmatic throughout his life. When he was 4-1/2 years old, his doctor prescribed weekly allergy shots.


During his youth, Rick's asthma could be so pronounced that twice he received adrenaline injections in emergency situations. Subsequently, Rick was prescribed medication that would provide him with both a more normal life and the opportunity to compete in athletics.

At the summer nationals in 1971, he had an asthma attack. A doctor treating athletes at the competition for AAU swimming gave him something called "Marax." It helped the asthma, but it impeded human performance so significantly that you couldn't use it and drive a car. When Rick returned home, his primary physician noted the swim doctor's medication and provided him a prescription for Marax. Ironically, it contained ephedrine, which was illegal-or sort of.

Rick had an asthma attack at 1 in the morning the day of the 400 free in Munich, and he took a Marax tablet. When he awoke hours later, he was still struggling to breathe. He went to the medical facility seeking help, but was told that all the medical staff was at the track venue. With the preliminaries of the 400 imminent, he was on his own, and he took more of his prescription.

Two days later, Rick cruised through the prelims of his best event, the 1500 , qualifying fifth in 16:17.6. His 400 had improved a full second from Trials, and he was anxious to show the world what he could do in the finals.

## THE IOC GETS INVOLVED

But the IOC Medical Commission stopped that plan. Ephedrine had been discovered in Rick's urinalysis. Some said that the 12 parts in a million present was an infinitesimal amount, while others thought it significant. A hearing before the Medical Commission was abruptly thrown together the next day before the 1500 finals.

The Commission included Dr. Daniel Hanely from the USA, who had appointed Dr. Winston Riehl as the head of the USA medical staff and Dr. Harvey O'Phelan, an orthopedic surgeon, as an assistant. Hanley and Riehl were questioned. Incredibly, the

- continued on 38


## RICK DeMONT - continued from 37



Team USA medical staff took no responsibility for any piece, part or molecule of DeMont's predicament.

Dr. Hanley said he never saw the medication form. Riehl insinuated that Rick was irresponsible when he described the boy as "a 16-year-old who had problems following instructions." Phelan said that he told the athletes not to take any medications without permission.

The Commission refused Rick's request to have an attorney or a coach at the hearing. They interrogated him, seemingly suspicious of his intent. DeMont told them, "I wrote my medications on the medical form."

Following his testimony, Rick hurried to the pool to warm up for the finals of the 1500. Don Gambril, Rick's coach on the U.S. Olympic staff, went to the ready room, where Rick sat waiting for the race to begin. He told Rick of the committee's decision when he said, "Sorry, no go." The Medical Commission denied him the opportunity to compete without ephedrine in his system.
On Sept. 6, 1972, the IOC Executive Committee ruled, "The Executive Board wishes to state that in its opinion, the responsibility for this situation rests on the team's medical authorities who are severely cautioned." But it was Rick DeMont who received the punishment! Not only did the IOC affirm Rick's disqualification from the 1500, but it went one step further. In 1912, Jim Thorpe became the first American to be stripped of an Olympic gold medal when it was discovered that he had played professional baseball. Now, the IOC made Rick DeMont the second.
The Commission chairman, Prince Alexandre de Merode of

Belgium reasoned later, "If there had been just a trace of ephedrine, there could have been room for discussion. But it was such a high concentration." He was ordered to return his 400 freestyle gold under threat of being kicked out of international swimming entirely.
"Rick lost his gold medal because of (the doctors') ineptitude," said Coach Daland.

## POST-MUNICH

In 1973, Rick resumed competitive swimming with a vengeance. Now treated with medication without ephedrine, he became the first human ever to swim 400 meters faster than four minutes when he defeated Brad Cooper at the World Championships, winning in 3:58.18 to the Aussie's 3:58.70-by negative-splitting the race.

Two days later, Rick and the new Australian sensation, Stephen Holland, raced right through the final length warning system in the 1500 . They raced more than an extra 100 meters after posting "foot-touch times" of 15:31.85 (Holland) and 15:35.44 (DeMont). Holland's time bettered the WR he had set a month earlier when he dropped nearly 15 seconds off of Mike Burton's mark from Munich-the largest drop since Burton lowered the record by 19.43 seconds to 16:08.67 in 1968.

Unfortunately, the years that followed were not easy for Rick DeMont, "I was afraid that every time I got on the starting block, people were thinking of me as some kind of speed freak, and I'm sure that's one reason my swimming went bad." Even so, several years later, Rick reinvented himself as a sprinter and was a part of a USA world record-setting 400 freestyle relay. Today, at the University of Arizona, he is one of the best swimming coaches in the world.

Physicians who treat asthma sent over 1,000 letters trying to overturn the decision to disqualify him. In a Harris Poll shortly after the Olympics, 76 percent of the respondents said that DeMont should be able to keep his gold medal. President Nixon sent him a letter saying the same thing. Perhaps Swimming World Magazine publisher Al Schoenfield summed up best when he wrote in the November 1972 issue,"Rick DeMont paid for the sins of his elders."

The 1976 USA Olympic swim team benefited from DeMont's debacle. The swimming organization conducted its own drug screening and found 16 swimmers unknowingly using banned substances. The discovery was made in time to adjust their medications effectively.

In 1983, Jim Thorpe's medals were restored and given to his children. In 2001, the U.S. Olympic Committee admitted it had mishandled Rick's medical information and requested that the IOC restore his gold medal. To date, the IOC has declined.

Are we, the public, powerless to convince the IOC to use its power to right this wrong?

For more information on how you can help encourage the IOC to return Rick DeMont's gold medal, please go to: www.negativesplitmovie.com. *

Chuck Warner is a part of Swimming World Magazine's editorial board and author of "Four Champions: One Gold Medal" and "And Then They Won Gold." Both books are available for purchase online at www.SwimmingWorld.com. Next month: "Swimming's Top 10 Triumphs and Tragedies: \#8."

## TRX SQUATJUMP

Starting in an upright position and leaning back, squat down to the floor and explode by jumping off the floor and using your quads.


## 2 TRX STREAMLINE

While holding onto the TRX straps and with your arms by your side, slowly extend your arms as your body angles forward. Get into a fully extended streamline, hold for three seconds and return to the starting position.


## B SUPINEDOLPHINKICKING

Lying on your back, put your feet through the TRX straps. Place your shoulders on a Bosu ball or something that lifts you six to eight inches off the floor. With your legs suspended, move your hips up and down, emulating an underwater dolphin kick.


## UNDERWATER

# SPEED 

BY J.R. ROSANIA
photos by kaituln kelly
demonstrated by tammy goff

I recently attended the NAIA Swimming and Diving National Championships. It was a great meet with many fast swims. One of the things that really stood out to me was the speed swimmers are now achieving while under water. No longer are swimmers only trying to increase their stroke turnover and kick tempo. Now they are also working on increasing the speed and distance they can travel underwater. This not only gives them more distance, but it also enables them to surface with more swimming speed.

Using a TRX Suspension Trainer, I have outlined four great movements to help with your underwaters. You will be strengthening your core and low back as well as your hamstrings. You can purchase a TRX Trainer online and use it at home...so no excuses!

Perform two to three sets of 20 reps of these exercises three times a week. *

## 4 SUSPENDED PLANK WITH ARM EXTENSIONS

Lying prone and with your feet through the TRX straps, maintain a stable straightbody position. Extend one arm forward and hold it for five seconds. Alternate to the other side and repeat.


[^0]BY SHANNON McBRIDE
PHOTOS PROVIDED AND DEMONSTRATED BY SHANNON McBRIDE

## Dr. Shannon McBride, a licensed chiropractor based in Atlanta, Ga., has been practicing since 2001. She also is certified in Pilates through Power Pilates and the Pilates Method Alliance.

## HERE ARE THREE HIP-OPENING STRETCHES DESIGNED FOR PEOPLE WHO SIT THE MAJORITY OF THE DAY.

Our hip flexors and gluteal muscles shorten and tighten when we sit for long periods of time. Tightness in the hips will eventually lead to tightness in the low back and misalignments in the spine and hips. Students and people with desk jobs spend the majority of their days sitting, and long commutes cause people to spend more time in their cars.
Tight hip flexors can cause a swimmer's legs to be too low in the water and will create a drag. On the other hand, having tight gluteal muscles can cause a swimmer's low back to tighten and the legs to lift too high in the water. Both of these incorrect swimming postures will slow down a swimmer's speed and can cause pain and injury.
It is important when sitting to practice proper ergonomics such as:

- Sit with both feet flat on the floor with your weight evenly distributed between the "sits" bones.
- The mid and low back should be against the back of the chair. Chairs with lumbar support are essential to maintain proper posture.
- Knees should be at a 90-degree angle. Thighs should be parallel to the floor.
- Shoulders should be directly over the hips.
- Stand and walk for a few minutes for every 30 minutes of sitting.
By lengthening and stretching the hip flexors, lumbar spine and gluteal muscles, we can correct the alignment of the pelvis and relieve low back pain. *


## CAT/COW POSE pornelowereark

1. Kneel on the floor with your hands directly under your shoulders and your knees directly under your hips.
2. While you exhale, round your spine and gaze toward your abdominals.
3. Inhale and look at the ceiling, sticking your bottom out.

REPEAT THREE TIMES FOR EACH POSE.


## PIRIFORMIS strecth

1. Cross your right leg over your left leg, placing your right ankle just outside your left knee.
2. Gently fold forward.

FOR A DEEPER STRETCH, GENTLY PRESS YOUR RIGHT KNEE TOWARD THE FLOOR.


## KNEELING LUNGE forthehprfexors

1. Kneel on the floor on both knees.
2. Step your left foot forward, making sure that your left ankle is directly below your left knee.
3. Deepen the bend of your left knee and move your left ankle forward so that it is directly under your left knee.

HOLD FOR 30 SECONDS AND REPEAT THREE TIMES. SWITCH TO THE OTHER SIDE.


## NUTRITION

Research suggests that at about age 4, most of us lose touch with the internal signals that, when heeded, reliably govern the amount of food we consume. Instead, we allow environmental factors to determine how much we eat, and the result is that we eat too much. Getting back in touch with your body's hunger and satiety signals will help you avoid overeating and reach your optimal racing weight.
In this month's nutrition column, Swimming World continues to provide flavorful, easy recipes for athletes. This month's recipe comes from "Racing Weight Cookbook: Lean, Light Recipes for Athletes" by Matt Fitzgerald and Georgia Fear.
Fitzgerald is well known in the world of endurance sports as a coach, certified sports nutritionist and an author of books on the science of training and nutrition. Gear, a registered dietitian and professional nutrition coach, works with athletes of all ranks-from age groupers to Olympic gold medalists.
The "Racing Weight Cookbook" makes it simple to dial in the right mix of carbs, fat and protein that will satisfy your appetite with high-quality, wellbalanced meals.
Try out this sample recipe (at right). *

Republished with permission of VeloPress from "Racing Weight Cookbook: Lean, Light Recipes for Athletes."


## SERVING

## BEAN, CORN \& CHEESE QUESADILLA

INGREDIENTS:

- $1 / 3$ cup frozen wholekernel corn
- $1 / 2$ cup canned refried beans
- 1 string cheese, chopped
- 1 large whole-wheat or sprouted-grain tortilla
- 1/4 cup salsa
- 1/4 cup plain Greek yogurt

DIRECTIONS:

- Thaw corn in a small bowl in the microwave for 30 seconds. Mix in refried beans and cheese.
- Gently spread the beans, corn and cheese mixture over half the tortilla, folding the other half over the top.
- Place tortilla in a large nonstick skillet over medium heat. Cook until the bottom of the tortilla becomes golden brown-use a spatula to lift it and take a peek. Flip over and cook until the other side is also golden brown and contents are heated through.
- Slide quesadilla onto cutting board and cut into four wedges. Top each wedge with salsa and Greek yogurt.

PER SERVING:
450 calories, 10 g fat, 61 g total carbohydrate, 11 g dietary fiber, 28 g protein
DQS COUNT (PER SERVING):
VEGETABLES 1-1/2 (1/2 legumes), WHOLE GRAINS 1, DAIRY 1


Head Coach
Georgetown Prep Training Site Nation's Capital Swim Club North Bethesda, Maryland

Following his instincts, Bruce Gemmell (University of Michigan, B.S., engineering, '83; M.S., '84) abandoned an engineering career for full-time coaching. Heavily influenced by mentors Bob Mattson at Wilmington Aquatic Club (Del.) and Jon Urbanchek, Gemmell, a 1980 and 1984 Olympic Trials qualifier, worked at SwimQuest (Lower Alloway Creek, N.J.) and Team Delaware before spending seven years as senior national coach at Delaware Swim Team. An excellent distance coach, he is a fivetime member of USA Swimming's national coaching staff. In October 2012, he moved to Nation's Capital (Georgetown Prep site) and began working with Olympic champion Katie Ledecky. In August at the 2013 World Championships, Ledecky won four gold medals and set two world records. In September, Gemmell was named ASCA's Coach of the Year.

# BRUCE GEMMELL 

BY MICHAEL J. STOTT
PHOTOS PROVIDED BY NATION'S CAPITAL SWIM CLUB


#### Abstract

IN THE LAST 18 MONTHS, BRUCE GEMMELL HAS PLACED A SON ON THE USA OLYMPIC TEAM, ASSUMED THE REINS AT THE GEORGETOWN PREP TRAINING SITE FOR NATION'S CAPITAL SWIM CLUB, HAS BEGUN COACHING OLYMPIC GOLD MEDALIST AND WORLD CHAMPION KATIE LEDECKY AND WAS NAMED ASCA'S 2013 COACH OF THE YEAR.


Q. SWIMMING WORLD: You were an assistant under Jon Urbanchek. What did you learn from him?
A. COACH BRUCE GEMMEL: Everything in this sport can be accomplished with integrity and respect if accompanied by hard work and patience. Jon is the hardest working, most respected, most humble man in this sport-and beyond. If I could have half of his qualities, I would be very lucky.

## SW: You have been credited with a "creative aquatic mind"... how so?

BG: I spent my age group years (9 to 18) swimming under Bob Mattson at Wilmington (Del.) Aquatic Club. Bob has some ideas that are "out there." He always encouraged us to explore our limits regarding stroke mechanics and training. He knew that one solution didn't fit all swimmers. I have carried that with me. I like to see where athletes may be in two to three years and not where they are now.

## SW: You once swam a 50,000-yard workout...

 BG: I did it between my sophomore and junior years in college. I was looking for something different and had already done a lot of typical mega-yardage training. I knew I was near the end of my career and wanted to do something special. Bob Mattson was there, but Sid Cassidy (now at St.Andrew's, Fla.) was the coach on deck who pushed me beyond my comfort zone that day.

I did two workouts: about six hours in the a.m., followed by a nap and food, and another four to five hours in the p.m. I was supposed to stop at 50 K , but Sid encouraged me to keep going. I ended up doing 54 or 55,000 . Most of it was a mix of aerobic free and back. We didn't know much about nutrition, fuel and hydration back then. Eventually, I just hit the wall and couldn't keep going.

SW: Swim coaches often borrow or "steal" ideas from one another. What's the best thing you have ever "stolen?"
BG: I have stolen Jon's "color charts" for training zones in their entirety-almost to where I can recite the training paces from memory. I use a lot of his weekly training cycles with some modifications.

## SW: You work out of the Georgetown Prep site. What are your duties besides coaching?

BG: If you mean besides being responsible for 120 athletes and 240 parents, a coaching staff of five, scheduling pool time-we rent at multiple sites-for all groups, assisting the other coaches, planning all meet schedules, entries and travel, communicating with all of our families and other coaches, organizing staff meetings, working
with USA Swimming, staying up-to-date on training and stroke techniques and changes, coordinating off-site dryland programs, helping athletes with college choices, writing recommendations, keeping speaking engagements, traveling for NCAP and USA Swimming AND coaching 10 practices per week for our senior groups...not much else!

SW: As a senior coach, how do you interact with the other senior coaches such as Pete

Morgan, Jeff King, Jeremy Linn, Tim Kelly, John Flanagan, Rob Washburn and Robbie Robins?
BG: We have eight to 10 sites that effectively operate autonomously. We have monthly staff meetings as well as daily emails and phone calls. I work most closely with Tim Kelly, who runs our American University site. It is closest to us geographically, and we run some combined workouts, especially in the summer. Each site has its
own individual make-up, demographics, facilities and challenges. Given the experience of our staff, at least somebody has seen most of the challenges we face. We all share a mutual respect. Our programs all have unique aspects, but the results speak for themselves.

SW: How is your goal of resurrecting the NCAP pipeline to USA Swimming going?

- continued on 44

HOW THEY TRAIN: NGAP/GEORGETOWN PREP SITEMIDDLE DISTANGE GROUP


Since its founding in 1978, Nation's Capital Swim Team and its antecedent, Curl-Burke Swim Club, have produced six American and eight international Olympians, and have expanded from one to 19 locations in Virginia, Maryland and Washington, D.C. In 2013, it was once again proclaimed a USA Swimming Gold Medal Club, thanks in large part to a hard-working group of middle distance swimmers.

The group consists of eight full-time and two part-time high school males and females who perform eight water and two off-site dryland workouts per week. Two of the morning water workouts are 90 minutes long, with the other six listed as 2.5 hours pool time, but rarely exceed two hours. Friday is typically an off day, but that varies according to pool availability and meet schedules.
"We follow a modified Jon Urbanchek weekly schedule," says Coach Bruce

Gemmell."Two workouts are threshold, two are active rest and two are speed or lactate. The other two are either general aerobic workouts with an emphasis on kicking or power, depending upon the season. At least two of the workouts are IM/stroke-focused, and that varies by week or individual," he says.

NCAP swimmers target a distance of 400 meters and five individuals in the group: Brian Tsau (16), Gavin Springer (17), Adrian Lin (16), Matthew Hirschberger (15) and Katie Ledecky (16), all of whom have broken 4:30 in their 500 yard freestyles. "Some of these athletes go up from there to the 800/1500 and some go down to the 200 as their other target events," says Gemmell.

A typical primary set on a February threshold day consisted of:

- $2 \times 500$ @ 5:30 "cruise"
- $4 \times 100$ @ 1:00 "cruise"
- $2 \times 400$ @ 4:20 "cruise"
- $4 \times 100$ @ 1:05 (faster than 1st set of 4 x100@1:00)
- $2 \times 300$ @ 3:10"cruise"
- $4 \times 100$ @ 1:10 faster than 2nd set of $4 \times 100$ @ 1:05)
- $2 \times 200$ @ 2:00 "cruise"
- $4 \times 100$ @ 1:15 (faster than 3rd set of $4 \times 100$ @ 1:10)
The coach notes that the longer repeats could be cruise with the interval getting shorter until swimmers are forced to do $2 \times 200 @ 2: 00$. The 100s had to start out going at least 58-59 seconds to make the interval and were to get faster by round. On this day, there were four individuals who did a great job descending the 100 s from 58 s to $57 / 56$ s to $56 / 55$ s to $54 / 52$ s by round. They also made all of the longer repeats with time to spare, typically holding 5:00/sub-4:00/sub-3:00 and 1:55. Several individuals made all the repeats, but may not have descended the 100 s as they should, and two to four swimmers didn't quite make the set (sat out a 50) despite their best efforts.
"It's a fun and exciting group. On any given day, two to four people are really 'on' and swimming lights-out. It changes from day to day. If you don't bring your 'A' game, you get whipped pretty good, and it happens to all of them from time to time.

Other members of the group are NAG record holder Isabella Rongione (14), Julian Wainer (16), Sam Tarter (15), IMer Greg Song (17) and IMer Brandon Goldstein (16). *

[^1]
## Q\& - continued foom 43

BG: Very well. We are benefiting from the great work done by those before me (Yuri Suguiyama, et al.). Our pipeline is full of hard-working, engaged swimmers and families. We have swimmers on international teams, national teams, junior national teams, at national select camps,zone camps, etc. Our job as coaches is to make sure swimmers move as fast as they're ready to move. The challenge is to make
sure swimmers don't get blocked by the great ones ahead of them.

## SW: How was coaching your son, Andrew, rewarding, yet frustrating?

BG: The rewarding part was getting to spend lots of time with my teenage son. Between practices, meets and travel, we spent way more time together than most father/sons. Highly self-motivated, Andrew


800-448-7714 • www.hastyawards.com
truly embraced the process and its challenges, making coaching him all the more rewarding. He challenged me to be better. The frustration came when we'd both get impatient. Jon once said his own greatest quality as a coach was patience. I should have listened to him.

## SW: What was it like to send Andrew off to Jack Bauerle?

BG: It was time. Jack (Bauerle) and Harvey (Humphries) are fantastic coaches and even better people. They have been very good for Andrew. I never had second thoughts about sending Andrew to Georgia.

## SW: What have you done to strengthen Katie Ledecky's deficiencies?

BG: You can always get better. Katie is a quick learner, and she clearly understands that.

## SW: Why the training emphasis on shorter distances for her?

BG: I'm not sure there is an emphasis on shorter distances. There is an emphasis on more speed because that is what you need to get faster for any distance. If more speed translates to shorter events, that's greatbut not the goal.

## SW: Why the move of NAG record holders Matthew Hirschberger (Clearwater) and Isabella Rongione (The FISH) to NCAP?

BG: They both contacted me around the holidays and asked if they could try a couple of practices. They must have liked the experience because they both started up pretty quickly afterward.

## SW: What is the dynamic like in that practice group these days?

BG: It is terrific. We have a fantastic group of swimmers who work hard consistently to get better. Though younger, it is reminiscent of the group (Phelps, Vanderkaay, Keller, Vendt, et al.) that Bob Bowman had at Club Wolverine leading up to the 2008 Olympics. They get after it pretty good. It's challenging and fun. *

TOTAL ACOESS MEMBERS OLICK HERE to learn more about how they train the Nation's Capital Swim Club (Georgetown Prep site) middle distance group.

# UP\& COMERS <br> AGE GROUP SWIMMER OF THE MONTH 

## BY SHOSHANNA RUTEMILLER REGANSMITH




In January 2013, Regan Smith took down four national age group records in a single meet, claiming the girls 10 -and-under 50 and 100 yard back $(27.79,59.89)$ and 50 and 100 fly $(26.91,59.80)$. She became the first girl in her age group to break a minute in the 100 back.
"When she broke the NAG in the 50 backstroke-(her first NAG record)-she broke it by 2 -hundredths of a second," says her coach, Phil Smith (no relation). "She cut a second-and-a-half off her best time. That one was one of the most impressive swims."

Now, a year-and-a-half later, Smith, who trains at the South Metro Storm Swim Club in Minnesota, is moving her way up the rankings in the 11-12 age group. She's dropped her 100 back best time by nearly three seconds to 56.93 and continues to improve her times across the board.
Although Smith, 11, is at the lower end of her age group, she still has big goals for the summer season: "Short term, l'd love to hopefully get the 50, 100 and 200 backstroke NAG records in long course," Smith says.

Currently, she is first in the nation among 11 -year-old girls in the 100 and 200 back and 50 and 100 fly. Her top-ranked 200
back time (2:03.82) is four-and-a-half seconds ahead of any other 11-year-old girl.

Smith's coach cites his swimmer's focus and drive as one of her key qualities:"She's one of the strongest work ethic individuals l've had in my 12 years as a coach. She knows what she needs to accomplish. She does what she is asked and doesn't go through the motions. She is willing to do what most people aren't willing to do on a day-in, day-out basis."

For her part, Smith has a few points she would like to focus on in practice: "I definitely think I need to always work hard in practice, especially on the walls and with my pacing-you know, do all of the little things."

Smith's favorite workouts always involve underwater dolphin work. She swims between four to six days a week, but she hasn't seriously incorporated dryland yet in her training routine.
"Long term, I would love to swim at a Division I college," says Smith, a sixth grader at Century Middle School (Lakeville, Minn.), where she enjoys language arts and reading. "Hopefully, I can make it to Stanford and swim there." *

## CLASSIFIED

LONGHORNS SWIM CAMP
The Longhorns Swim Camp at The University of Texas at Austin is seeking mature, motivated and teamoriented individuals to be part of its 37th year!

Exciting opportunity to work with world-renown staff: Eddie Reese, Carol Capitani, Kris Kubik and Roric Fink. Guest coaches/speakers include Olympians Ian Crocker, Brendan Hansen, Kathleen Hersey, Colleen Lanné-Cox, Garrett Weber-Gale and Whitney Hedgepeth.

Five one-week sessions (June 1-July 4). Room, board, parking, \$550/session salary, up to \$300 travel expense help and NIKE camp apparel package included. Applicants agree to work in an alcohol/drug-free environment and must have completed minimum of 65 hours college credit. Competitive swimming and/or coaching/ camp counseling experience required. References, First Aid, CPR and/or Lifeguarding/Safety Training for Swim Coaches must be submitted.

For more information/application, check our employment section at www.LonghornswimCamp.com. Completed applications accepted until positions filled.

The University of Texas at Austin is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability, age, citizenship status, Vietnam era or special disabled veteran's status or sexual orientation. *

was previously held by Missy Franklin, and on the final night of the meet, Manuel stole Janet Hu's 50 free record away from her while racing Hu in the same final heat. Her 21.70 winning time bettered the 21.82 mark that Hu had set in December. Come this fall, Manuel and Hu will be teammates at Stanford.

Hu (Nation's Capital), who is primarily known for her talent as a sprinter, stunned the crowd when she posted 1:52.92 to win the 200 fly and break the girls 17-18 NAG record set by Elaine Breeden in 2007 by 7-hundredths of a second.

Women's butterfly marks continued to fall when Nation's Capital's Cassidy Bayer-who took down legendary Mary T. Meagher's 1314200 fly NAG in December-added the 100 fly to her collection. She touched the wall in a 53.30 , 6-hundredths of a second under Elizabeth Nelson's former record...and it just so happened that Nelson was racing in the lane next to Bayer!

It didn't take an "A" final win for Gross Pointe Gators'Alexis Wenger to score an NAG. Wenger took the girls 13-14 100 breast mark with a 1:00.98 to win the "B" final. Her time was 3-tenths faster than Megan Quann's 1:01.29 record from 1998.
The men also boasted a collection of impressive swims. Michael Andrew, the 14-year-old professional swimmer who holds all but two short course NAG records, lowered four of his own records at the meet-100 back (47.83), 100 fly (47.40), 200 fly (1:45.39) and 200 IM (1:47.42) -and added the 200 free (1:38.31) to his list.
Nation's Capital's Andrew Seliskar was conspicuously absent from the meet until the very end, but the 17-year-old got everyone's attention when he lowered the boys 17-18 NAG record in the 200 breast to 1:52.21. That cut more than a second off the 1:53.55 set by Kevin Cordes in 2011.
Although there weren't any records set in the mile, there were definitely some fast times. Isabella Rongione of Nation's Capital won the 1650 by more than six seconds in 16:09.48. PACK's Patrick Ransford, the sixth seed going into finals, split 27-lows per 25 for most of the race, taking a remarkable 36 seconds off his seed time for a 14:46.60 win. *

## SW APRIL CORRECTION

In the Top 12 World Masters article (page 24), Richard Burns talked about Bob Strand coming back from heart surgery. Strand had prostate surgery.

SWIM MART
 SOOS POOL BOYS TEM NEAT GRLSTEN GIRISPOK


GRID CONCEPTS
wwu.gridoncepepts.com
86631042278


Braided Elisstic Goggle Replaciement Strap Cot Water? It is so comfortable • No more headaches! SM)
Vail usat Vailtusat
WWW.smackswim.com


WWN.LUCKYSLAKESWIM.COM
FOR THOSE THAT DO!

## LEAN, LIGHT RECIPES <br>  <br> Try FREE recipes! <br> vvelpress.com




Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speedo $>$


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA) -the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


Founded in 1922, the College Swimming Coaches Association of America (CSCAA)-the oldest organization of college coaches in America-is a professional organization of college swimming and diving coaches dedicated to serving and providing leadership fro the advancement of the sport of swimming at the collegiate level.
speeda'>


TIEAM STANDINGS
528
402.5 386 336 252 239

Emma Svensson, FGU
Lilil lanez,TAM
BeccaWeiland, UMN 1:43.82
Ellen Lobb,UTX 1:44.25
Breeialarson, TAM 1:44.47
Anika Apostalon,SOSU
Faith Johnson, UTN
Consolation Finals
Natalie Hinds, UFL
Lia Neal, STAN
Kaylin Bing CA - $1 \cdot 4398$
:43.98
1:44.76


4:32.66 Missy Franklin, CAL 100 BACK
4:35.93 Amber McDermott,UGA
4:36.06 Lindsay Vrooman, UIN 50
4:36.91 Bonnie Brandon, UAZ 50
Shannon Vreeland, UGA 50.91
Kiera Janzen, UMN 51.05 Sarah Henry, TAM 51.12
Consolation Finals 51.32
LeahSmith, UVA 51.81
Cammile Adams, TAM 51.84
Melanie Klaren, CAL
Sam Harding, UMN 51.47
Stephanie Peacock, UNC 51.82
51.82 Jordan Mottern

Consolation Finals 15:40.27 Amber McDermott, UGA
Lia Neal, STAN 15:42.04 LeahSmith, UVA
Chelsea Chenault, USC 15:42:44 Lindsay Vrooman, UIN $\quad 1: 50.52$
$\begin{array}{lll}\text { Rachael Acker, CAL } & 15: 56.38 \quad \text { Tjasa Oder, UAZ } & 1: 50.55\end{array}$

$$
\begin{aligned}
\text { Kiera Janzen, UMN } & 1: 50.84 \\
\text { Alicia Mathieu, UFL } & \text { 1:51.65 } \\
\text { Madison Jacobi, FSU } & 1: 52.21 \\
\text { Sammy Harison, OSU } & 1: 52.44 \\
\text { Kaitlin Burke, TSU } & 1: 53.68 \\
\text { Sam Harding, UMN } & 1: 54.78 \\
\text { Lauren Baker, UCLA } & \\
\text { RachelZilinskas, UGA } & 1: 52.37 \\
\text { Megan Sivering, PSU } & 1: 52.84 \\
\text { Hanne Borgersen, UVA } & 1: 53.39 \\
& 1: 53.79
\end{aligned}
$$

ARCH21
Championship Finals
1:54.42
Paige Miller, TAM
Cindy Tran, CAL D
DQ
C. Bartholomew, UVA Sinead Russell, UFL Elizabeth Beisel, UFL Melanie Klaren, CAL Sam Corea, DEN Jillian Vitarius, AUB Consolation Finals Aubrey Peacock, AUB Paige Miller, TAM Stephanie Au, CAL Kira Toussaint,FGU Madison White, UCLA A. Thayer, STAN RachelZilinskas, UGA Melanie McClure, TAM Felicia Lee, STAN B. Snodgrass, UIN 100 BREAST MARCH21 Championship Finals Breja Larson, TAM Emily McClellan, UWM Emma Reaney, NDU Kasey Carlson, USC Katie Olsen,STAN Molly Hannis, UTN Kaylin Burchell, UAL Tara-L. Nicholas, SMU Consolation Finals Bronwyn Pasloski, UIN Sarah Hase, STAN Katharine Ross, UMO Hilda Lutherscottir, UFL Ashley MCGregor, TAM Gretchen Jaques, UTX Weronika Paludzek, VAT

Annie Zhu, UGA

| 200 BREAS | MART MAR 22 | 1:58.07 | Elizabeth Beisel, UFL | 1:37.53 | Wisconsin | 3:14.90 | Wisconsin | 354.75 | Emma lvory-Ganja, UTX |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Championship Finals | 1:58.42 | Jasmine Tosky, USC | 1:37.84 | Missouri |  | Consolation Finals | 293.00 | Christa Cabot, UKY |
| 2:04.06n | Emma Reaney, NDU |  |  | 1:38.06 | North Carolina | 3:14.95 | Texas A8M |  | Consolation Finals |
|  | (27.87,59.35, 1:31.36) | 200 IM | MARCH20 | 1:38.17 | PennState | 3:15.26 | Auburn | 368.60 | MargaretKeefer, UMN |
| 2:05.88t | Breeja Larson, TAM |  | Championship Finals |  |  | 3:15.29 | North Carolina State | 366.05 | Kaylea Arnett, VaT |
| 2:05.88t | Katie Olsen,STAN | 1:52.50 | Maya DiRado, STAN | 400 MR | MARCH20 | 3:15.31 | Minnesota | 360.70 | Victoria Lamp, UTN |
| 2:06.40 | Melanie Margalis, UGA | 1:52.64 | Melanie Margalis, UGA |  | Championship Finals | 3:15.69 | Texas | 357.65 | Cassie Weil, LSU |
| 2:06.53 | Ashley MCGregor, UTX | 1:53.85 | Celina Li, CAL | 3:27.51n | Stanford | 3:16.07 | Florida State | 347.60 | Haley Shimatsu, USC |
| 2:06.76 | Kierra Smith, UMN | 1:54.80 | Elizabeth Pelton, CAL |  | DiRado 51.42 | 3:16.18 | UCLA | 335.55 | Hailey Casper, ASU |
| 2:06.98 | Emily McClellan, UWM | 1:55.11 | Stina Gardell, USC |  | Olsen 1:49.69 | 3:16.41 | Penn State | 307.10 | S. Bromberg, UTX |
| 2:07.98 | Annie Zhu, UGA | 1:56.14 | Felicia Lee, STAN |  | Lee 2:40.51 |  |  | 299.10 | En-Tien Huang, UNV |
|  | Consolation Finals | 1:56.15 | Emma Reaney, NDU |  | Neal $3: 77.51$ | 800 FR | MARCH 21 |  |  |
| 2:08.35 | Stina Colleou, UTAH | 1:56.88 | Marnioldershaw, UMI | 3:28.12 | Texas A\&M |  | Timed Finals | 10-METER | MARCH 22 |
| 2:88.52 | Weronika Paluszek, VAT |  | Consolation Finals | 3:29.43 | Georgia | 6:54.94 | California |  | Championship Finals |
| 2:08.69 | Laura Simon, UVA | 1:56.37 | Jasmine Tosky, USC | 3:30.27 | Florida | 6:55.09 | Georgia | 340.90 | Haley Shimatsu, USC |
| 2:09.22 | Emma Schoettmer, UAZ | 1:56.49 | Kaitlyn Jones, UVA | 3:30.70 | California | 6:55.62 | Stanford | 349.30 | Emma lory-Ganja, UTX |
| 2:09.26 | Molly Hannis, UTN | 1:56.79 | Tanja Kylliainen, LOU | 3:32.28 | Tennessee | 7:00.18 | USC | 345.25 | Laura Ryan, UGA |
| 2:09.4 | Andrea Kropp, USC | 1:56.95 | Mikaela Mackin,SOSU | 3:34.21 | USC | 7:01.81 | Virginia | 338.45 | Kara McCormack, MIA |
| 2:09.72 | S.McMahon, TAM | 1:57.40 | Caroline Piehl, CAL | DQ | Virginia | 7:02.43 | Minnesota | 319.10 | Kahley Rowell, CAL |
| 2:11.68 | Christine Wixted, DUKE | 1:57.50 | Meghan Hawthorne, USC |  | Consolation Finals | 7:02.66 | Texas A\&M | 305.55 | Victoria Lamp, UTN |
|  |  | 1:57.71 | ToriSimenec, UMN | 3:30.56 | Indiana | 7:03.83 | Florida | 303.95 | Cassie Weil, LSU |
| 100 FLY | MARCH21 | 1:57.86 | Madisyn Cox, UTX | 3:31.24 | Arizona | 7:04.13 | Texas | 294.70 | M. Tweardy, PUR |
|  | Championship Finals |  |  | 3:31.66 | Southern Methodist | 7:05.98 | North Carolina |  | Consolation Finals |
| 50.89 | Felicia Lee, STAN | 400 IM | MARCH 21 | 3:34.36 | Louisville | 7:06.20 | Tennessee | 319.30 | Kersten Merry, UTAH |
| 51.09 | Kelsi Worrell, LOU |  | Championship Finals | 3:34.63 | Texas | 7:06.49 | UCLA | 307.20 | Kate Hillman, UIN |
| 51.10 | Marne Erasmus, SMU | 3:58.12 | Maya DiRado, STAN | 3:35.04 | Florida State | 7:06.60 | Ohio State | 290.60 | Christa Cabot, UKY |
| 51.47 | Andrea Ward, UCSB | 3:58.84 | Elizabeth Beisel, UFL | 3:35.18 | Minnesota | 7:07.12 | PennState | 278.05 | Margaret Keefer, UMN |
| 51.50 | Ellese Zalewski, UFL | 4:00.30 | Melanie Margalis, UGA | DQ | Alabama | 7:07.23 | Arizona | 276.60 | Hannah Prigge, FSU |
| 51.64 | Cindy Tran, CAL | 4:02.88 | Sarah Henry, TAM |  |  | 7:08.07 | Indiana | 269.00 | Taylor Olanski, HOUS |
| 51.66 | Elizabeth Boyce, PRIN | 4:03.16 | Cammile Adams, TAM | 200FR | MARCH20 |  |  | 266.80 | Kaylea Arnett, VaT |
| 52.25 | Farida Osman, CAL | 4:05.16 | Amber McDermott, UGA |  | Championship Finals | 1-METER | MARCH 20 | 252.85 | Nicole Scott, RUT |
|  | Consolation Finals | 4:07.34 | Stina Gardell, USC | 1:26.23 | Stanford |  | Championship Finals |  |  |
| 51.62 | Sam Corea, DEN | 4:08.02 | Celina Li, CAL | 1:26.67 | California | 312.35 | Laura Ryan, UGA |  | OMEN'S NCAA |
| 51.72 | Jess Reinhardt, LIB |  | Consolation Finals | 1:27.19 | Georgia | 333.75 | Maren Taylor, UTX |  | IVISIONII |
| 51.90 | K. Herrington, UNLV | 4:05.88 | Nicole Vermon, UGA | 1:27.39 | Texas A\&M | 332.70 | Kaylea Arnett, VaT | SWIMMII | NG AND DIVING |
| 52.01 | Mackenzie Powers, PSU | 4:06.18 | Hali Fickkinger, UGA | 1:27.69 | Tennessee | 328.20 | Margaret Keefer, Vat | CHAMPIO | ONSHIPS |
| 52.06 | Dani Barbiea, UMO | 4:06.85 | Gabrielle Shishkoff, PSU | 1:27.97 | Wisconsin | 326.25 | Michaela Butter, MASS | GENEVA, | WISCONSIN |
| 52.46 | Becca Weiland, UMN | 4:07.51 | Carolyn Blalock, UNC | 1:28.11 | Arizona | 314.65 | Haley Shimatsu, USC | MARCH | 12-15, 2014 (25 YD) |
| 52.54 | Ting Wen Quah, UCLA | 4:10.17 | Sonnia Perez, FU | 1:29.41 | USC | 312.30 | Kara McCormack, MIA |  |  |
| 53.08 | Sophia Batchelor, CAL | 4:10.26 | Andie Taylor, STAN |  | Consolation Finals | 310.05 | Thea Vock, MIA | * NCAA | DIVISION II RECORD |
|  |  | 4:10.55 | Chelsie Miller, UKS | 1:27.54 | Florida |  | Consolation Finals |  |  |
| 200FLY | MARCH 22 | 4:11.68 | Julia Henkel, FSU | 1:28.16 | North Carolina State | 303.85 | Victoria Lamp, UTN | TEAM STI | ANDINGS |
|  | Championship Finals |  |  | 1:28.72 | Auburn | 303.45 | Michelle Cabassol, PUR | 486 | Drury |
| 1:52.62 | Cammile Adams, TAM | 200MR | MARCH 21 | 1:29.17 | Minnesota | 296.75 | Kaixuan Zhang, SIU | 419 | Wayne State |
| 1:53.823 | Maya DiRado, STAN |  | Championship Finals | 1:29.22 | UCLA | 296.00 | Hailey Casper, ASU | 368.5 | Queens.NC |
| 1:53.05 | Lindsay Gendron, UTN | 1:34.95 | Stanford | 1:29.33 | San Diego State | 294.30 | Emma lvory-Ganja, UTX | 300 | WestChester |
| 1:53.63 | Kelsi Worrell, LOU | 1:35.32 | Tennessee | 1:29.42 | Tesas | 291.60 | Alexandra Clay, STAN | 248.5 | UCSan Diego |
| 1:53.65 | Tina Bechtel, UKY | 1:35.42 | Florida | 1:29.72 | Virginia | 290.60 | Wenting Zhang, ISU | 230.5 | Wingate |
| 1:54.76 | Hali Fickinger, UGA | 1:35.59 | Texas A\&M |  |  | 288.40 | Paige McCleary UAL | 184 | Florida Southern |
| 1:55.52 | Caroline McElnay, TAM | 1:35.98 | Georgia | 400FR | MARCH 22 |  |  | 178 | Bridgeport |
| 1:55.85 | Meredith Hover, UNC | 1:36.69 | Texas |  | Championship Finals | 3-METER | MARCH21 | 149 | Californi Baptist |
|  | Consolation Finals | 1:37.21 | Virginia | 3:10.83 | Stanford |  | Championship Finals | 132 | Grand Valley |
| 1:54.65 | Lauren Harrington, UGA | 1:37.73 | North Carolina State | 3:10.99 | Arizona | 423.15 | Lauran Ryan, UGA |  |  |
| 1:54.84 | Tanja Kylliainen, LOU |  | Consolation Finals | 3:11.37 | California | 399.30 | Maren Taylor, UTX | 50FREE | MARCH 12 |
| 1:54.88 | Noelle Tarazona, UCLA | 1:37.59 | USC | 3:12.09 | Georgia | 385.20 | KaixuanZhang, Siu | 22.62 | Ana Azambuia, WSU |
| 1:56.43 | Abby Myers, UKY | 1:37.67 | Indiana | 3:12.44 | Florida | 370.65 | Michelle Cabassol, PUR | 22.88 | Wai Ting Yu, DRURY |
| 1:56.44 | Brenna Maclean, UN | 1:37.39 | Arizona | 3:13.01 | USC | 369.40 | Michaela Butler, MASS | 22.92 | Mary Hanson, CBU |
| 1:57.24 | Andrea Ward, UCSB | 1:37.49 | Michigan | 3:14.10 | Tennessee | 363.90 | Wenting Zhang, ISU |  | -continued on 64 |






| Fortherec | ECORD- -ontinued from 67 | 1:29.67 | MIT | 1:39.22 | PatCardillo, SCAD | 800 FR | MARCH 6 | 1:49.05 | Alec Scott, IRSC |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 146 | Chicago | 1:29.74 | Kenyon | 1:39.32 | Javier Sossa, OBU | 6:34.98* | Savannah College | 1:54.16 | Gabe Downey, DC |
|  |  | 400MR | MARCH2O | 500 FREE | MARCH6 | 6:36.18 | Oklahoma Baptist | 100 BREAS |  |
| 50 FREE | MARCH 19 | 3:15.13 | Emory | 4:25.67 | Joel Ax, SCAD | 6:39.59 | Olivet Nazarene | 55.70 | Marc Rojas |
| 20.06 | C. Brindamour, USCG | 3:15.99 | MIT | 4:31.56 | Andrew Fischer, ONU | 1-METER | MARCH6 | 55.88 | Shota Nakano |
| 20.15 | Ross Spock, EMORY | 3:16.60 | Kenyon | 4:31.82 | Bradley Moore, UNON | 206.30 | Jarod Haynes, OBU | 57.42 | Brandon Graber, IR |
| 20.32 | Jason Potter, Gettr | 200 FR | MARCH2O | 1650 FREE | MARCH8 | 180.45 | Mark Ponthier, OBU | 200 BREAS | AST MARCH |
| 100 FREE | MARCH22 | 1:20.47 | College of New Jersey | 15:30.09 | Joel Ax, SCAD | 165.55 | Adam Cribs, OBU | 1:58.82 | Shota Nakano |
| 44.18 | Stephen Culberson, TRIN | 1:20.96 | Emory | 15:56.05 | Sam Borgman, ONU | 3-METER | MARCH5 | 2:01.80 | Marc Rojas, IR |
| 44.46 | Austin Caldwell, KEN | 1:21.06 | Johns Hopkins | 15:58.34 | Bradley Moore, UNION | 192.55 | Mark Pontier, OBU | 2:06.29 | Grandon Graber, IRS |
| . 66 | Stephen Tarnowski, CNJ | 400FR | MARCH 22 | 100 BACK | MARCH7 | 180.60 | Jarod Haynes, OBU | 100 FLY | MAR |
| 200 FREE | MARCH 20 | 2:58.07 | College of New Jersey | 46.28* | Daniel Ramirez, OBU | 125.95 | Adam Cribbs, OBu | 48.09 | Heinicich Alberts, IIS |
| 1:37.16 | Austin Caldwell, KEN | 2:58.67 | Denison | 48.76 | Georgi Kraslev, SAU |  |  | 48.42 Ste | Stefan Stojmenovic |
| 1:37.59 | Carlos Maciel, DEN | 2:59.70 | Gettysburg | 49.70 | Jacob Anderson, ONU | (\%) | V'SNJCAA | 49.98 | Sota Nakano, |
| 1:37.68 | Stephen Tarnowski, CNJ | 800FR | MARCH 21 | 200 BACK | MARCH8 | H SV | SWIMMING AND | 200 Fly | MARCH |
| 500 FREE | MARCH 19 | 6:31.50 | Johns Hopkins | 1:46.44 | Ryan Searles, SCAD | DIIING | CHAMPIONSHIPS | 1:48.49 | Evan Jacob |
| 4:24.31 | Allen Weik, DEN | 6:33.39 | Denison | 1:47.92 | Georgia Krastev, SAU | FORT PIEP | ERCE, FLORIDA | 1:51.20 | einrich Alberts, |
| 4:26.94 | Drew Ledweth, KSU | 6:35.12 | College of New Jersey | 1:48.84 | Nico Brun, OBU | MARCH 5 | 5-8,2014 (25 YD) | 1:51.63 | Brandon Thoman |
| 4:27.40 | Arthur Conover, KEN | 1-MEEER | MARCH20 | 100 BREAST | MARCH7 |  |  | 200 IM | MAR |
| 1650 FREE | E MARCH22 | 522.95 | Johann Schmidt, TUFS | 54.05 | Gregory Penny, OBU | ITEAM STA | ANDIINGS | 1:48.41 | Alec Scott, |
| 15:05.60 | Allen Weik, DEN | 5221.75 | Ben Lewis, DEN | 55.29 | Vitor da franca, OBU | 173 | Indian Riv | 1:50.13 | bshua Oathout, |
| 15:12.98 A | Andrew Greenhalgh, JHU | 510.80 | James Stovick, CMS | 55.59 | Tim Richard, OBU | 1098 | Darton | 1:51.16 | Quinn Poti, IRS |
| 15:19.33 | Arthur Conover, KEN | 3-METER | MARCH 22 | 200 BREAST | MARCH8 | 1009 | South Georgia | 40019 | MARCH |
| 100 BACK | MARCH21 | 613.90 | Connor Dignan, DEN | 1:59.03* | Gregory Penny, OBU | 882 | lowa Lakes | 3:56.27 | lec Scott |
| 48.72t | Samuel Gill, CONN | 536.40 | Max Levy, DEN | 2:00.35 | Tim Richard, OBU | 734 | Monroe | 3:59.29 | Evan Jacob, |
| 48.72 t | Ross Spock, EMORY | 520.60 | Anthony Restaino, CHI | 2:00.76 | Vitor da Franca, OBU | 544 | Ocean County | 4:01.09 | Quinn Poti, |
| 09 | Mathew Williams, CMS |  |  | 100 FIV | MARCH | 304 | SUNY Delhi | 200 MR | MAR |
| 200 BACK | MARCH22 | (\%) | EN'SNAIA | 46.13* | Daniel Ramirez, OBU | 235 | Genesee | 1:30.44 | Indian |
| 1:45.11 | Harison Curle, KEN | $\cdots$ | WIMMING AND | 48.54 Ma | WarkShvartsman, SCAD | 198 | Jamestown | 1:35.54 |  |
| . 42 | Kevin Lindgren,USMM | DIVING 0 | HAMPIONSHIPS | 48.61 | Garland Sullivan, OBU | 195 | Lincoln | 1:35.98 | waLa |
| 1:45.88 | Benjamin Cori, WILL | OKLAHO | MA CITY, | 200 FLY | MARCH8 |  |  | 400 MR | MARCH |
| 100 BREAS | MARCH21 | OKLAHO |  | 1:47.68 | Aaron Buchanan, ONU | 50 FREE | MARCH6 | 3:15.33 | Indian Ris |
| 54.10 | Michael Lagieski, WM | MARCH | 5-8,2014 (25 YD) | 1:50.93 | Andrew Gurley, SAU | 20.59 St | Stefan Stojmenovic, IRSC | 3:29.96 | South Ge |
| 54.26 | Andrew Wilson, EMORY |  |  | 1:50.97 Mar | MarkSthvarsman, SCAD | 20.71 | Bryce Timonera, IRSC | 3:30.42 | bwa Lak |
| 54.53 | Johnson Cochran, CALV | * $=$ NAIA | RECORD | 2001 M | MARCH6 | 20.78t | SpencerWilliams, IRSC | 200 FR | MARCH |
| 200 BREAS | AST MARCH22 |  |  | 1:49.86 | Jacob Anderson, ONU | 20.78 t | Michael Ragan, IRSC | 1:21.25 | Indian |
| 1:58.21 | S. van Deventer, OCC | TEAM ST | ANDINGS | 1:50.07 | Aaron Buchanan, ONU | 100 FREE | MARCH8 | 1:24.7 | owa La |
| 1:58.54 | Andrew Wilson, EMORY | 849 | Oklahoma Bapt | 1:50.61 | Daniel Robbins, OBU | 45.21 | Adam Wise, IRSC | 1:25.43 |  |
| 1:59.62t | Alex Card, UWEC | 492 | Savanah College | 400 IM | MARCH 7 | 45.39 | Michael Ragan, IRSC | 400 FR | MARC |
| 1:59.62t | Trevor Manz, KEN | 453 | Olivet Nazarene | 3:54.49 | Tim Richard, OBU | 45.91 | MattWeiss, DC | 3:00.12 | Indian |
| 100 FLY | MARCH2O | 344 | Brenau | 3:57.87 | Aaron Buchanan, ONU | 200 FREE | MARCH7 | 3:99.74 | South Geor |
| 47.91 | Karl Mering, WHIT | 341 | Concordia | 3:59.23 | Kar Hegwein, SCAD | 1:38.98 | Adam Wise, IRSC | 3:10.73 |  |
| 47.92 | Samuel gill, CONN | 269 | Cumberlands | 200MR | MARCH6 | 1:39.10 | Michael Ragan, IRSC | 800FR | ARC |
| 48.10 | lan McKay, MIDD | 247 | Biona | 1:26.83* | Oklahoma Baptist | 1:40.50 | Michael Kugo, MCC | 6:37.38 | dian |
| 200 FLY | MARCH21 | 230 | Union | 1:28.83 | Savannah College | 500 FREE | MARCH6 | 7:05.12 |  |
| 1:45.36 | Hugh Anderson, MWC | 135 | College of ldaho | 1:30.02 | Olivet Nazarene | 4:33.94 | Ronald Santos, IRSC | 7:07.23 |  |
| 1:45.38 | Jeffrey Depew, RED | 106 | Lindsay Wilson | 400 MR | MARCH7 | 4:34.04 | Marc Rojas, IRSC | 1-METER | MARC |
| 1:45.78 | Karl Mering, WHIT |  |  | 3:12.88* | Oklahoma Baptist | 4:35.62 | Evan Jacob, IRSC | 542.70 | Crawford Berry, DC |
| 200 IM | MARCH 19 | 50 FREE | MARCH6 | 3:17.88 | Savannah College | 1650 FREE | MARCH8 | 495.25 | MattSalle, DEL |
| 1:47.44 | Jeffrey Depew, RED | 19.71* | Logan Lassley, OBU | 3:21.79 | Olivet Nazarene | 16:04.55 | Ronald Santos, IRSC | 391.70 | Cory Barnes, |
| 1:4775 | Hugh Anderson, MWC | 20.21 | Garland Sullivan, OBU | 200 FR | MARCH 7 | 16:05.36 | Quinn Poti, IRSC | 3-METER | MARCH |
| 1:48.92 | Carlos Maciel, DEN | 20.24 | Pat Cardillo, SCAD | 1:18.43* | Oklahoma Baptist | 16:12.78 | JDRousseau, DC | 583.50 | Crawford Berry, |
| 400 IM | MARCH2O | 100 FREE | MARCH8 | 1:20.26 | Olivet Nazarene | 100 BACK | MARCH 7 | 434.05 | Matt Salle, DEL |
| 3:49.25* | Hugh Anderson, MWC | 42.53* | Daniel Ramirez, OBU | 1:21.44 | Savannah College | 48.47 | Joshua Oathout, IRSC | 361.85 | Eric Moore, ILC |
| 3:50.81 | Harison Curley, KEN | 43.96 | Simon Pheasant, ONU | 400 FR | MARCH8 | 49.23 St | Stefan Stojmenovic, IRSC |  |  |
| 3:51.98 | Trevor Manx, KEN | 44.46 | Pat Cardillo, SCAD | 2:56.71* | Oklahoma Baptist | 50.42 | Bryce Timonera, IRSC |  |  |
| 200 MR | MARCH 19 | 200 FREE | MARCH7 | 2:58.41 | Olivet Nazarene | 200 BACK | MARCH8 |  |  |
| 1:28.16 | Emory | 1:36.7** | Joel Ax, SCAD | 2:59.53 | Savannah College | 1:46.67 | Joshua Oathout, IRSC |  |  |



PICTURED > GIVE THAT COACH A " 10 "! HEAD DIVING COACH
DAN LAAK'S CELEBRATORY DIVE INTO THE POOL WAS A PERFECT
FINISH TO A PERFECT MEET FOR GEORGIA'S LADYBULLDOGS, WHO
DOMINATED THIS YEAR'S WOMEN'S NCAA DIVISIONISWIMMING
AND DIVINO CHAMPIONSHIPS.
(SEF STORY, PAGES 20-24:)



[^0]:    MEET YOUR TRAINER
    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.

[^1]:    A TOTAL ACGESS MEMBERS GLICK HERE
    to learn more about how they train the NCAP/Georgetown Prep site middle distance group.

