ROW 360

ISSUE 003 // NOV | DEC 2014

THE FLUID DYNAMICS *of Shells*

MORAN SAMUEL *Changing Attitudes*

BOSTON CALLING *Head of the Charles reviewed*

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Photo: Hamish Roots

What does it take to be the world's best? The Kiwi Pair certainly know – FISA just made them the 2014 World Rowing Male Crew of the Year after yet another unbeaten season. Rowing fans will know by now what this means on the course – they have had more than enough chances over the years of dominance by Eric Murray and Hamish Bond to see just how impressive their victories are.

But our aim at **Row360** is to give a glimpse into the mostly unknown lives of the world's best, and the results can sometimes be surprising. Amongst the revelations in Rachel Quarrell's fascinating interview with the pair is that they have not done weight training during most of their time at the top – a startling admission in an age when it is taken as read for professionals.

There can be few better viewpoints to get the inside track in world sport than that of cox, and Zoe De Toledo and Katie Apfelbaum – authors of our Chattercox column – have seen some of the biggest races from the inside, including the Head of the Charles Great Eight, which brought together some of the best in the world into a one-off dream team. But even these world-beating athletes have their quirks and idiosyncrasies, and it's always refreshing to know that even in the world of high-end professional sport, they still have personalities, and even a sense of humour behind the scenes.

Row360

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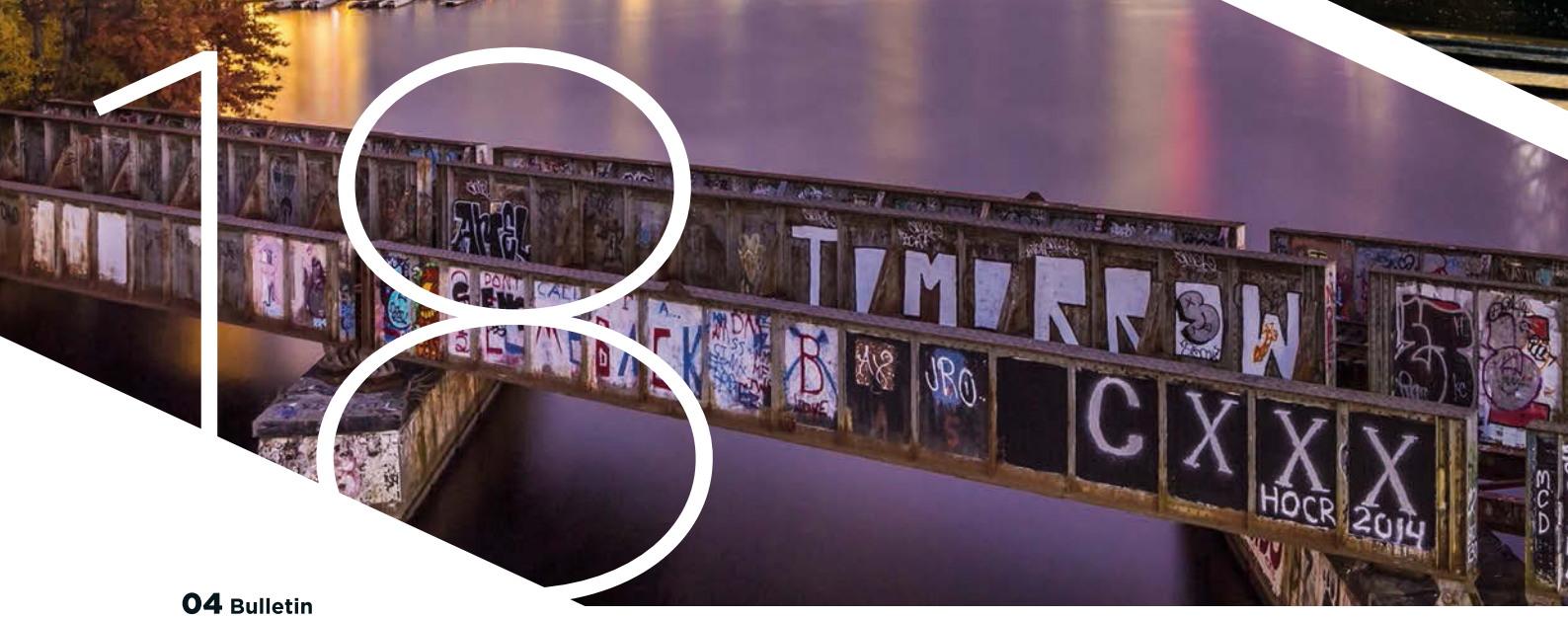

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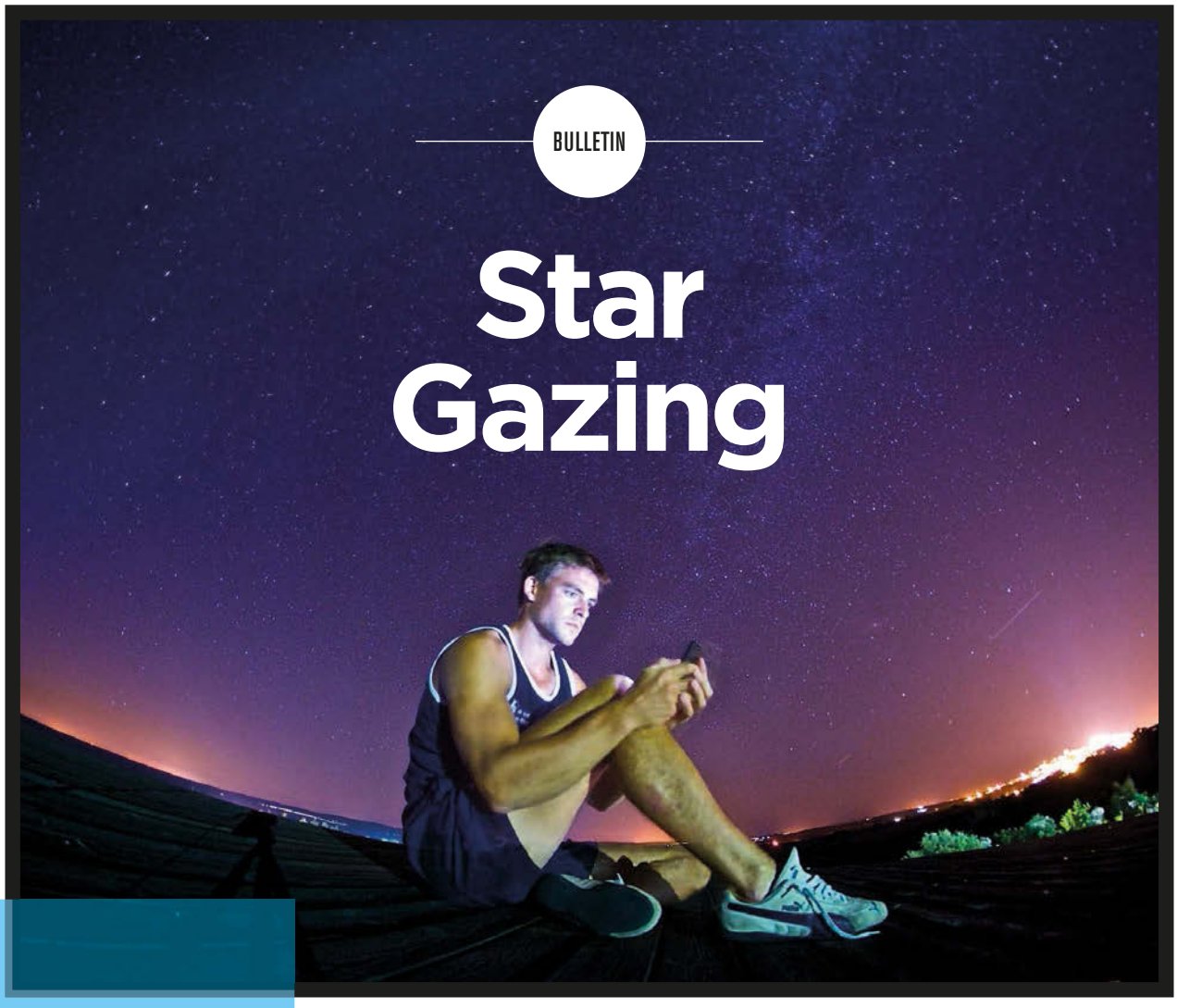
Star Gazing



Pete Reed sits under the stars at the GB Rowing Team training camp in Avis, Portugal. As well as coming fifth in the World Rowing male athlete of 2014 top 10, Reed is a keen photographer. Follow him on his site for more insider views of the GB rowing squad.

www.petereed.com
www.instagram.com/petereed

New erg monitor

▶ **Concept2** have released the PM5, the latest in their range of performance monitoring computers. The PM5 displays all of the stats you would expect of a rowing monitor: distance, speed, pace, calories, and watts. But it's in the detailed statistical breakdowns that the PM5 really comes into its own, with force curve views on the new backlit display. The monitor comes with both ANT+ and Bluetooth Smart technology, allowing it to communicate wirelessly with enabled heart rate monitors and smartphones. The free ErgData app for iPhone and Android means you can get detailed performance data, including drive length and peak force, on your phone in real time, as well as sync your results with the Concept2 Online Logbook.

£145 / $180, www.concept2.com

"Row hard or go home" demands the motto of **Square Blades.** We can't argue with that. T-shirts, sweaters and accessories for the fashion-conscious rower in your life. Visit www.squareblades.co.uk to see more.

T-shirt: *£15.99 / $25.00*
Wristband: *£2.99 / $5.00*

PRODUCTS

Apple Watch

Apple has a history of coming late to the game and then dominating. Comes with a whole suite of exercise applications, including heart rate monitor and accelerometer – although it is only water-resistant, not waterproof. Developers are already scrambling to find applications.

£TBA, Release early 2015

Samsung Galaxy Gear Fit

Like the Apple Watch, the Gear Fit only works with other Samsung devices through their app. Water-resistant in up to 1m, it will survive a quick dunking. Small screen, but has heart rate, accelerometer and gyro sensors, and battery lasts up to four days.

£169 / $149.99

Casio STB-1000

The catchy-sounding STB-1000 works via Bluetooth with the Wahoo fitness app on Android and iPhone. Form factor does not match other watches, but for serious training when linked to a phone the Casio delivers durability and an excellent two-year battery life.

£80 / $99.95

Garmin Forerunner 920XT

Packing in everything a fitness watch could need, the top-end Forerunner does not come cheap. Metrics measure running or swimming style (it's fully waterproof to 50m), along with pretty much everything else, giving training programmes and even VO2 max estimates online.

£389.99 / $449.99

Nike+ Sportwatch

The sportswear giant has a popular social forum in Nike+ where you can upload your training programme and compare. GPS data and accelerometer allow route tracking and it's water-resistant as well, although the heart-rate monitor is sold separately for another £50/$50.

£149 / $140

Pebble Watch

Pebble were one of the smartwatch pioneers, with a big crowd-funding campaign. E-paper display means long battery life, and water-resistance to 50m is also handy for the price. Accelerometer gives data to a range of apps, but the lack of built-in heart rate sensor limits it.

£100 / $99

FASHION

Queen B Athletics was established by and for women, with sport-specific kit requirements in mind. Leggings, tops and one-pieces are all available in a range of colours. See www.queenbathletics.com for more information.

One-piece

€54/£43/$67 + shipping.

GOOD MONTH

ERIC MURRAY'S ERG

Forget Kim Kardashian – it was Eric Murray of cover stars @kiwipair breaking the rowing internet this month, posting a picture of their 6000m erg. Their unbelievable splits broke the hearts of amateur rowers worldwide (and probably a fair few professional ones as well).

KATHERINE GRAINGER'S RETURN

After taking two years out of rowing to complete a law doctorate, the return of Olympic gold medallist Katherine Grainger was the big story of the GB trials. She finished second in the racing, behind Melanie Wilson. The GB team has no regard for sentiment, so Grainger will have to fight all the way to make it back into the top boat.

SNOWFLAKE REGATTA

Rowing viral video of the month was undoubtedly the appropriately named Snowflake Regatta Carnage. The unfortunate novice competitors were involved in a multiple pile-ups mid-race, with parents on the shore screamed for them to keep rowing.

BAD MONTH

SAVE THE DATE.

09 DEC 2014

Oxford & Cambridge Women's Boat Race trial eights

The Tideway, Putney, UK

The Oxford and Cambridge Women's squads compete in trial eights over the 4.25 mile course from Putney

www.theboatraces.org

10 DEC 2014

Oxford & Cambridge Men's Boat Race trial eights

The Tideway, Putney, UK

The Oxford and Cambridge Men's squads compete in trial eights over the 4.25 mile course from Putney to Mortlake

www.theboatraces.org

13 DEC 2014

Remenham Challenge

The Tideway, Putney, UK

The seven founding members of the Remenham Club race each other on the Tideway

www.remenhamclub.co.uk

BRIEFLY

The term "designer boat" took a new twist recently when classic US designers **Brooks Brothers** unveiled their own single scull at the Head of the Charles in Boston. Perhaps this is the boat to aspire to if you want it to look its best on the rack rather than on the water.

Ocean rowing company, **Rannoch Adventure**, has just announced the dates for their inaugural European Offshore Rowing Series. Taking place at venues throughout the UK, Holland and the Mediterranean next year, it's a must for those who are looking to extend their rowing experience to open water and endurance disciplines. All levels and experience welcome.

events@rannochadventure.com

It won't help you go faster, but you'll certainly look the part in the clubhouse with this original, limited edition tie by *Rowing Blazers* author, **Jack Carlson** *(right)*. It comes in navy blue and features hand-drawn embroidered blazers.

$48 / £30 + pp (ships worldwide)

www.rowingblazers.com

20 DEC 2014
GB Senior team Assessment
Boston, Lincolnshire, UK
Members of the GB squad compete in singles and pairs in a 5km time trial
www.britishrowing.org

2015

03 JAN 2015
Hawkes Bay Cup Regatta
Clive River, Hastings, New Zealand
One of the premier NZ regattas. Six-lane 2000m racing
www.rowit.co.nz

17 JAN 2015
European Open Indoor rowing championships
Amsterdam, Netherlands
Some of Europe's finest rowers congregate to challenge for both Dutch national and European Open titles
www.euro-open.eu

24–25 JAN 2015
Cambridge Town Cup
Lake Karapiro, Cambridge, New Zealand
One of the premier NZ regattas. Six-lane 2000m racing
www.rowit.co.nz

One in a million

MOTHER ROWS 1,000,000m FOR CHARITY

An amateur indoor rower and mother from Yorkshire has rowed 1,000,000m (1000km) for charity, raising thousands of pounds for Macmillan Cancer Support in the process. **Jo Moseley**'s parents were both supported by Macmillan when they were suffering from cancer, and so she took up the erg challenge to say thank you and raise proceeds to continue their work.

On 21 November Moseley *(pictured left)* completed the challenge, which she began in May, with a marathon 26.2 miles on the rowing machine. Her next challenge is to try rowing for real on the water. "I've only ever rowed a little dinghy," she says, "so that would be an exciting opportunity – although I can't guarantee how good I'd be."

Even after rowing the equivalent of the Olympic course 500 times, Moseley is still keen to keep up the erg: "I love it!" she says. "It has been the most wonderful experience, and whilst I know it's odd to say, I do really enjoy it. However, I appreciate that might be because I've never had to do a 2000m erg test!"

To donate visit **www.justgiving.com/OneHappyRower** or text "HAPY80 £[donation amount]" to 70070.

.39%

Time separation between the two Great Eights at the Head of the Charles

It came down to 3 seconds, or 0.39% from first to second place.

"I hope you're enjoying your evening tonight, and you can go and have a couple of caipirinhas for me!"

EMMA TWIGG IN HER ACCEPTANCE SPEECH ON WINNING THE 2014 WORLD ROWING FEMALE ROWER OF THE YEAR AWARD IN RIO.

31 JAN 2015
European Indoor Rowing Championships
Szczecin, Poland
Members of the GB squad compete in singles and pairs in a 5km time trial
www.ecrowing2015.pl/en

01 FEB 2015
Thames Valley Trial Head
Dorney Lake, Eton, UK
A 2000m time trial
www.themarlowregatta.com/tvth/

06–08 FEB 2015
North Island club Championships NZ
Lake Karapiro, Cambridge, New Zealand
www.rowit.co.nz/regattas

Not Just For Christmas

There must be something in the water at **Warwick University**, where naked calendars seem to be the order of the day for the rowing squads. The women are supporting Macmillan Cancer Support, while the men are joining the fight against homophobia in sport with their Sports Allies charity. Buy them now at **www.warwickrowing.org** and **www.warwickrowers.org**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YEAR IN BRIEF

NOV 2013

The Head of the River Fours – Tideway Scullers win, with possibly the best quad ever to race on the Tideway: Alan Campbell (GB), Ondrej Synek (CZE), Valent Sinkovic (CRO) and Aleksander Aleksandrov (AZE). They beat a Leander crew, containing Olympic champion Alex Gregory, by over 25 seconds.

DEC 2013

In New Zealand the imperious Eric Murray and Hamish Bond both set new world records on the ergo. Murray set a 1:07:58.1 for the half-marathon (at an average of 1:36/500m split) and Bond set a new one-hour record of 18443 metres (an average split of 1:37/500m).

JAN 2014

Denmark's Olympic LM2X champions Rasmus Quist and Mads Rasmussen announce their intention to defend their title in Rio (although they do not compete together in 2014).

FEB 2014

Back in New Zealand Hamish Bond underlines his status as the greatest oarsman in the world with his third consecutive victory of the season over Mahe Drysdale in the M1X, this time at the NZ Championships. He follows this up with a win in the Premier M2- with lightweight international, James Lassche, setting the second fastest time in history in the process.

MAR 2014

The Head of the River Race on the Tideway is abandoned 30 minutes after the start due to treacherous conditions at the finish which see a number of crews swamped.

APR 2014

Oxford win the 160th University Boat Race by a whopping 11 lengths – the biggest margin of victory since 1955. A great day for the Dark Blues is rounded off with a 13-length victory for the Reserves, Isis – the biggest margin of victory in that race for nearly 20 years.

MAY

2014

A GB senior M8 win the Windermere Cup in Seattle, beating a superb University of Washington crew by just two seconds. The Washington Huskies get their revenge in the women's race, defeating a GB crew coxed by Zoe De Toledo by a length.

JUN

2014

In the "A" final of the W8 at the second World Cup in Aiguebelette, the Canadians surprise the world by leading the Americans by over a length at the 1000m mark. But, the Americans produce an unprecedented second 1000m to overhaul the Canadians and win by over a second.

JUL

2014

A wonderful 175th Henley Royal Regatta with some fantastic racing. Oxford Brookes become the first British university since 2006 to win the Temple Challenge Cup. But the performance of the regatta was Julien Bahain and Mitchel Steenman winning the Silver Goblets. Bahain was a last-minute substitute for an injured Rogier Blink, and had never been in a boat with Steenman before the eve of their first race.

AUG

2014

The World Championships in Amsterdam. World best times galore are set as a brisk tail wind on the Bosbaan produces lightning-quick conditions. The race of the Championships was the Men's 8. GB defend the title they won in 2013 with an awesome middle 1000m. A testament to the strength in depth of the British squad is that the crew only contained three oarsmen (plus cox, Phelan Hill) from last year's crew.

SEP

2014

The speculation about "will-she-won't-she" is finally settled as Olympic Champion Katherine Grainger announces her return to the sport after a two-year break. She is hoping to win a second gold medal in Rio, but it'll be without her 2012 partner Anna Watkins, who announced that she is expecting her second child.

OCT

2014

The 50th Head of the Charles Regatta in Boston. The men's Championship 8's sees a "Super-Sweep" all-star crew take on a "Great8" scullers all-star crew. The sweepers, racing as Taurus, were put together by Hamish Bond and include the likes of Josh Dunkley-Smith, Conlin McCable and Richard Schmidt. The Scullers boat racing as Craftsbury includes Mahe Drysdale, Olaf Tufte, Ondrej Synek, Martin Sinkovic and Roel Braas. Add into the mix an all-star lightweight M8, the US and French national teams and a top German boat, and it is possibly the best line-up ever.


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Photo: Chris Worden

BOAT RACE PRESIDENTS UPDATE

Constantine Louloudis (Oxford University BC)

So exhilarated was P.G. Wodehouse's Bertie Wooster in the wake of a Dark Blue victory in the Boat Race that he saw fit to steal a policeman's helmet, incurring a fine of some £5. Almost a century on the race now stands as part of the last truly amateur event in the sporting calendar. So it is easy to see why 30 students should take on the dual burden of training and rigorous academic work which is part and parcel of trialling for the OUBC.

This year's squad, as with all those I've been fortunate to be part of, is showing the team spirit needed to go the distance, and rising to the challenge set by the coaches. With a number of returning athletes stepping up to the plate, and plenty of new blood with different perspectives and experiences, competition for seats will be fierce, which can only be good news for the team as a whole.

Personally, I've never agreed with those who declare with great assurance that a loss in the Boat Race means seven wasted months. I've always thought that friends made and experiences gained along the way counted for something that transcended winning or losing. But now, leading the club in my final year, after three unblemished seasons at Oxford, I have absolutely no intention of falling short of a fourth win come 11 April.

Of course, much has changed since the days of Jeeves and Wooster. This year sees the arrival of the women's Boat Clubs to the Tideway, in a move hailed from all sides as timely and progressive. We wish OUWBC all the best for a successful inaugural race over the championship course. Here's hoping for another double victory for Oxford. I must make sure I don't do anything too stupid at the after party.

Alexander Leichter (Cambridge University BC)

Joining the Cambridge University Boat Club was one of the best decisions of my life. Being able to lead the club for the 161th Boat Race campaign is a great honour and challenge at the same time. I've rowed for a number of years and represented my country [Austria] as a junior and senior rower. However, leading Cambridge into the BNY Mellon Boat Race is a completely different challenge. The nature of the race, its history and impact is absolutely unique in the world, and thus requires very specific management and preparation.

In sport, and the Boat Race in particular, the harsh truth is that after thousands of hours of training one side must win and another must lose.

After last year's defeat, the club has revised and re-evaluated many aspects of our training programme. We have had a chance to see some results from these changes already. Part of the squad raced in Boston at the Head of the Charles and in Nottingham at the British Trials, giving an early indicator of where we're at, where we feel we still need to improve. The Head of the River Fours was the only occasion through the year where we could be directly compared to Oxford, but in a long season a lot will change between now and 11 April. A successful season is a Boat Race and Goldie win.

With the Women's Race moving to the Tideway, this is a great time to be involved in the Race. This is a significant step in the development of the Boat Race and acknowledges the parallel commitment and dedication the women's team put into their own preparation. As Oxford won both the first Boat Races in 1829 and 1927, Caroline and I are setting out to mark this new chapter in Boat Race history in Light Blue.

Caroline Reid (Cambridge University WBC)

I'm Caroline, president of CUWBC for the 2014/15 season. I started rowing four years ago when I began my veterinary degree at Cambridge. After persuasion from my school that if I applied to Cambridge I could try rowing (something that after a brief assay into indoor rowing aged 13 they decided I might enjoy, or at least have some aptitude for), I was looking forward to actually getting in a boat. I headed down to my college boat house open day in Fresher's week. After winning a bottle of prosecco for the top female erg score on the day, I decided that maybe this could be a sport for me.

Since then I've never looked back, although the days of winning prosecco for ergs are long gone. I started trialling in my second year. Since then I have learnt to embrace the early nights before the 0555 trains to Ely (where we do our water sessions) and I definitely had no problem increasing my carbohydrate consumption to match the needs of increased training. I've made the Blue Boat for the last three years, being victorious in my first year and losing the subsequent two.

With my three years of experience with the club I feel well placed to lead the squad in what is a historic year – both for CUWBC and for women's rowing on a greater scale – with the heavyweight races moving to the Tideway to race alongside the men. The season's started well, with record numbers trialling and many returning athletes to complement the new intake. As with any Boat Race campaign, I'm sure the season will have its ups and downs, but whatever the season may throw at us, the Light Blues are ready for it and looking forward to the challenge of turning around our defeat last year.

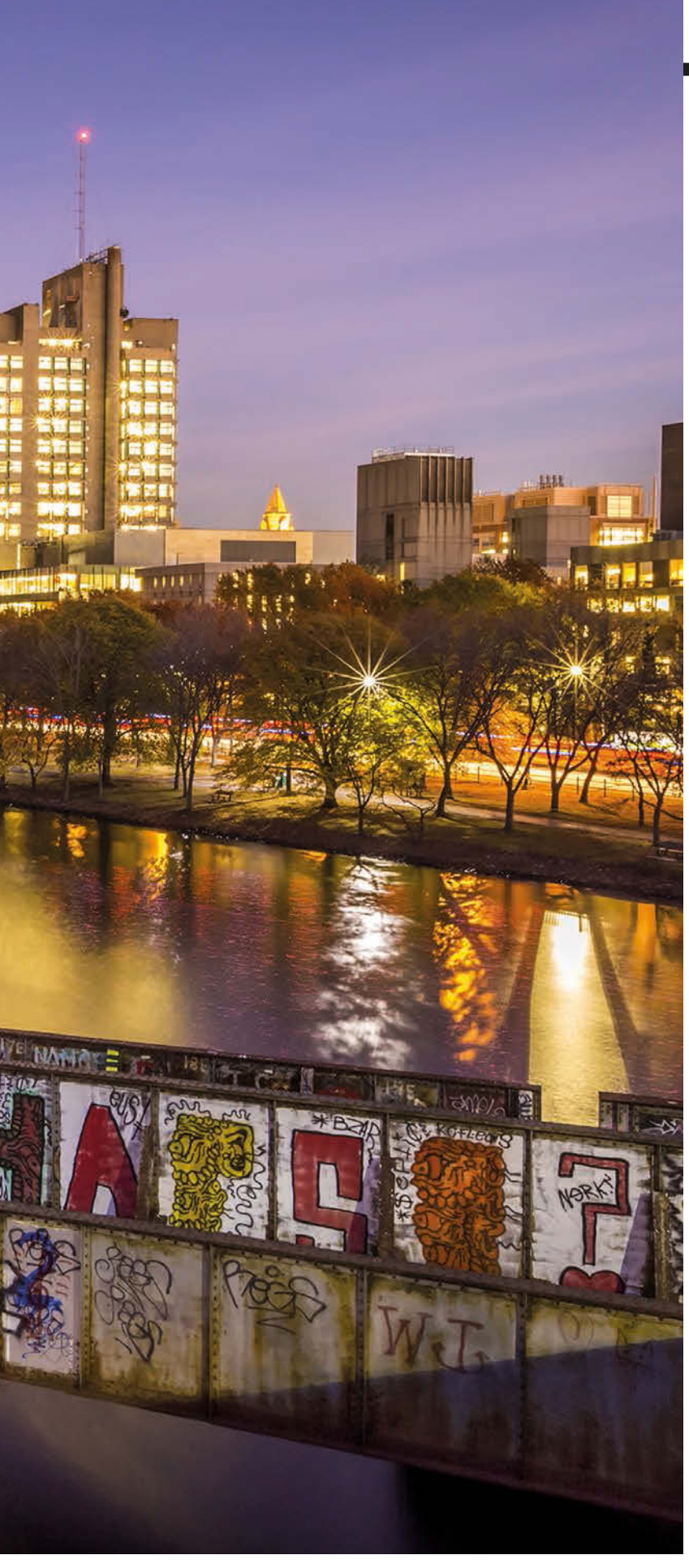
Anastasia Chitty (Oxford University WBC)

I was brought up in London, and as a youngster often walked down to the riverside with my parents to watch the Dark and Light Blues battle it out on the Thames. Never once did I dream of racing down that same course wearing blue, since for young girls the Boat Race, as the public know it, wasn't something we could dream of adding to our list of goals.

The addition of women's races to the Boat Race programme offers girls an opportunity to dream big while raising the profile of women's sport in Great Britain. In addition to leading a phenomenal group of scholar-athletes into a history-making season, serving as president is an enormous privilege. I am a third-year medical student who learnt to scull at school when I was nine years old. Since then I've had the chance to compete for my country, winning junior and U23 medals, as well as race in the victorious Oxford crews for the last two Newton Women's Boat Races.

While the Presidents' Challenges marked the official start of the Boat Race season, we have been training since early September and have enjoyed early season racing performances at the Head of the Charles in Boston (fourth in the Championship Women's Eights) and a top spot among university quads at the British Championships. That glorious honeymoon period before our academic commitments began in October has come to an end, and everyone on the team is now fully into the swing of daily life as a Boat Race athlete: living out of a rucksack; sprinting on a bike between lectures, training sessions and the libraries; spending brief periods of time at home before sunrise or after sunset. We are the most fortunate Oxford women.


CXXX
HOCR
2014



The 50th anniversary of the Head of the Charles Regatta

Boston Calling

WORDS ELIZABETH DIAMOND
PHOTOGRAPHY MARCIO JOSE BASTOS SILVA

Head of the Charles 2014 was certainly one for the record books. The city of Boston is at its best in October, and it looked even better draped in HOCR regalia. But while the 50th celebrations and the hordes of Olympians were the talk of the rowing-interwebs, the event still maintained its historic reunion status. I would argue that no other sport in the United States has a singular event that draws generations of athletes back each year, where you're guaranteed to run into an old coach or a teammate on the banks of the Charles or even at 2am in Harvard Square. For two days in October, Cambridge isn't just host, it's home to anyone who has ever been blistered by an oar. And here are a few stories behind those characters.

Let's start with the Sinkovic brothers. Yes, they're fast; exceptionally fast actually. And their rowing is so pretty that it makes me actually work on my roll-up. Martin and Valent set a course record on Saturday afternoon in conditions that were favourable (slight tail, low current) but certainly not as favourable as the conditions in 2013, when the Potomac Stitt/Miller combination broke what had been one of the longest-standing records at the Charles. You may know that the Sinkovic brothers crushed Stitt and Miller's time →

by almost 20 seconds, but did you know that our two favourite Croatians had never tasted the sweet delicacy of fried pickles before arriving in Boston? It's not just about the lobster rolls, people. The brothers also made some fantastic decisions on race day, including avoiding the Cambridge shore arch at Anderson, a detour that cost Synek and Tufte 75 seconds in penalties.

And then there's Andrew Campbell and Gevvie Stone, famed CBC scullers. The Cambridge rowing community has watched both @TheAndyCamps and @gevgevs grow some serious rowing limbs and pocket accolades. For Campbell, this started with a silver medal performance at the Junior Worlds before he arrived in Cambridge, to an IRA win, to a HOCR lightweight 8+ gold, to his more recent successes and swims at the international level. Campbell secured the HOCR Champ single win between Riverside and CBC, after being eight seconds down on Kjetil Borch through the first split station. He narrowly broke the course record set by Borch in 2013 by less than a second, and I'm guessing he steered a course well under the conservative 4800-metre estimate.

For Gevvie Stone, this race is a family affair. The timing of the Champ single has never permitted her to pair up with her father (Gregg Stone) to compete in the parent/child double, but at the 2014 HOCR they won their respective singles races by healthy margins. Stone has now captured five Championship singles titles at the HOCR, a feat only Gail Pierson (Cromwell) and Anne Marden have achieved.

The Championship events are the marquee events of the HOCR weekend, but they account for just eight of the 60+ races. One event that typically flies well under the media radar is the women's master eights, a small division with a field typically under 20 hulls. This year, a decorated Molesey entry boasting Katherine Grainger, Cath Bishop, and Kate Allen (née Slatter) navigated from the middle of the pack to break the course record by almost 40 seconds. But what's remarkable about this division isn't just the pedigree of the Molesey crew. It's the fact that three other boats also broke the previous record: Toronto Sculling, Pocock, and Willem III. Women's boats are getting faster. Men's boats are certainly no exception either. The course record in the men's master eight has fallen every year since 2012, with Molesey Boat Club, Kennebecasis Rowing Club, and now Shannon Rowing Club. The line-ups in each of these boats would likely still contend in the Championship eights.

> Stone has now captured five singles titles, a feat matched only by Gail Pierson and Anne Marden.

It takes a village to raise a HOCR and to keep over 2000 boats running through the start chute on time. Since 1965, thousands of volunteers have helped support this event and moulded it into the race it is today. D'Arcy MacMahon, one of the regatta's founding oarsmen, returned to a very different race than the one he started. The first HOCR was held on 16 October, 1965, and boasted roughly 250 athletes in 100 shells. To put that into perspective, on Saturday 18 October, 2014, 250 athletes competed before 10:06 in the morning, and 9000+ were still waiting their turn. D'Arcy was one of those athletes. He returned to the men's senior veteran II singles and as the results show no penalties, he achieved his goal: to enjoy the experience without impeding anyone else's.

On Monday morning post-HOCR, we text about the aftermath and learn about Trinity grads teaching the Great Eight how to play flip cup. The stories are what sustain us through winter erg sessions, through sweat rows in July and through the mornings that are just a little darker than we really want. And the story of the Charles is a melting pot of talent, ages, and love of the sport. What we find on the banks isn't just the chance to watch the puddles left by the Great Eights but the opportunity to leave puddles ourselves. The HOCR isn't just about the best of the best, beautiful bronze medals, the blazers or all that fantastic shiny new gear. It's about 50 years of shared experience. I hope everyone who made it on the water enjoyed the ride. ROW360

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www.swiftinternational.biz

GREAT*EIGHTS*

Some of the world's top rowers give their verdict on rowing in the Great Eight invitational boats at the Head of the Charles Regatta in Boston.

"COMING INTO THE GREAT EIGHT AS THE MOST INEXPERIENCED SCULLER WAS PARTICULARLY EXCITING BECAUSE I LEARNED A LOT FROM THEM – I TRIED TO BE A SPONGE ALL WEEKEND, AND SEE HOW THE PROFESSIONALS IN THE SPORT PREPARED AND RACED." **CARLING ZEEMAN, CAN W4x**

"At the start line on that Sunday, it doesn't matter if it is sculling or sweeping, if you are from Croatia or New Zealand, if it is an eight or a single, we were all in the same mood: let's give everything and win that race. And as soon as the competition is over, it is just a bunch of friends who like to share a drink, re-do the race over and over, and talk about the old times... This is what rowing is about." **JULIEN BAHAIN, CAN M1x**

"It was a once in a lifetime kind of experience for me. Winning was the cherry on top. It was great to get to know all my peers and work for one goal as a team. I don't get to race teams very often, and to be in the team like that was certainly a treat." **SANITA PUSPURE, IRE W1x**

"SITTING TOGETHER WITH SO MANY GREAT SCULLERS AND FRIENDS IS A BIG PRIVILEGE. AND GETTING THE BOAT TO GO SO FAST IN SO SHORT A TIME IS AMAZING, AND FUN. IT SHOWS THE GREATNESS OF THESE NINE MEN." **OLAF TUFTE, NOR M1x**

"There was a lot of organizing that went into getting this group together, and at times it felt like a far-off dream that all of us would ever actually sit in a boat together. So it felt surreal blazing down the course together and finally hearing that we had won. It was a very special time." **JOHN GRAVES, USA M4x**

"IT IS ALWAYS SO MUCH FUN TO RACE IN BOSTON. IN NO OTHER INTERNATIONAL RACE ARE YOU GOING TO BE RACING WITH SUCH A BIG CROWD OF SPECTATORS. I WAS SURPRISED WITH SUCH A GOOD RACE, CONSIDERING WE ONLY MANAGED TO DO A COUPLE OF PRACTICES. EVEN THOUGH WE HAD AN ACCIDENT RACING IN A DOUBLE WITH MIRKA [KNAPKOVA], WE WERE VERY OPTIMISTIC AFTER THE RACE, LOOKING FORWARD TO RACING IN THE EIGHT THE NEXT DAY." **DONATA VISTARTAITE, LTU W2x**

"To be part of this special group of the best rowers and compete at HOCR 2014 together with them was one from the best moments of this year. A lot of fun, focusing of the race and other things made us champions – and boys from sweep 8+? Sorry guys :-)" **ONDREJ SYNEK, CZE M1x**

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The Fluid Dynamics of Rowing *or*

Shells:

WORDS CARL DOUGLAS
CEng MIChemE MSc

My preceding article examined wind drag, its importance and how to mitigate wind-induced losses and go faster. We also considered wave drag and shallow water effects. Now let's consider how the hull surface interacts with the water.

Friction between the hull surface and water is often the dominant drag component limiting boat speed. Overcoming drag requires a power proportional to the multiple of boat speed times the sum of all drag forces. That's the propulsive power, but the power needed at the oar-handle is higher because energy is wasted by complex interactions between oar-blade and water – to be discussed in a later article.

Layers of water molecules

Fluid friction arises through a process called shear. Water molecules touching the hull adhere and are dragged along at boat speed. The next molecular layer of water is sheared between this and the layer on its other side, itself being held back by the bulk of water beyond. This is fluid shear on the microscopic scale: water molecules are only 0.3 millionths of a millimetre apart, and their strong intermolecular forces resist this relative movement, imposing a drag force over the hull surface in the direction of motion. Slice a knife blade through honey and you'll feel that same force.

That first molecular layer sliding past the boat then drags along the next. Soon thousands of molecular layers are moving, each pulled along by the shear force on the side nearest the hull and held back by a similar force on its outer face. Because these forces come from the velocity differences between layers the shearing between layers falls as the thickness of this "boundary layer" increases. At the bow the boundary layer is minutely thin, causing high fluid drag

Several Ways to Save a Second

Part II

per unit area which falls rapidly as you move astern and the layer thickens.

This fall in friction towards the stern further justifies our long, thin hulls, since small length increases there hardly affect total frictional drag, giving scope to adjust length to optimize wave drag and/or pressure recovery around the after-body.

Turbulence and vortices

However, simple scenarios often unravel. As the boundary layer thickens, after a metre or so it becomes unstable. Instead of molecular layers sliding smoothly past each other (known as laminar flow), instabilities develop. Flow layers nearest the hull may even reverse, and tiny vortices of water spin off through adjacent layers, encouraging other vortices to form and move with increasing vigour. The disrupted boundary layer thickens, becoming turbulent, with vortices carrying packets of energy away from the hull, while others bring slower packets the other way. To see how this increases fluid drag, imagine a multitude of passing skaters collecting and exchanging heavy bags on the fly.

After this laminar-to-turbulent transition, a diminished laminar sub-layer remains, but it is so thin that shear forces within it are much increased. The boat drags along the thickening turbulent boundary layer, which enlarges the boat's apparent shape and deflects the passing streamlines. Fig.1 shows how local drag varies from bow to stern while Fig.2 shows (in exaggerated form) the growth of the boundary layer (see over). You can see the turbulent boundary layer in the narrow band of disturbed flow running along the side of your shell.

Laminar/turbulent transition can be delayed, reducing friction, by surfacing the hull with ultra-fine parallel ridges some 0.04mm deep (3-M's proprietary "Riblets"), or with regularly patterned denticles (like shark-skin scales, about 0.3mm long, attached only by their forward ends and barely 0.03mm deep); or by boundary-layer suction (sucking water through minute holes in the skin) or by trickling polyethylene oxide into the water – but these methods are →

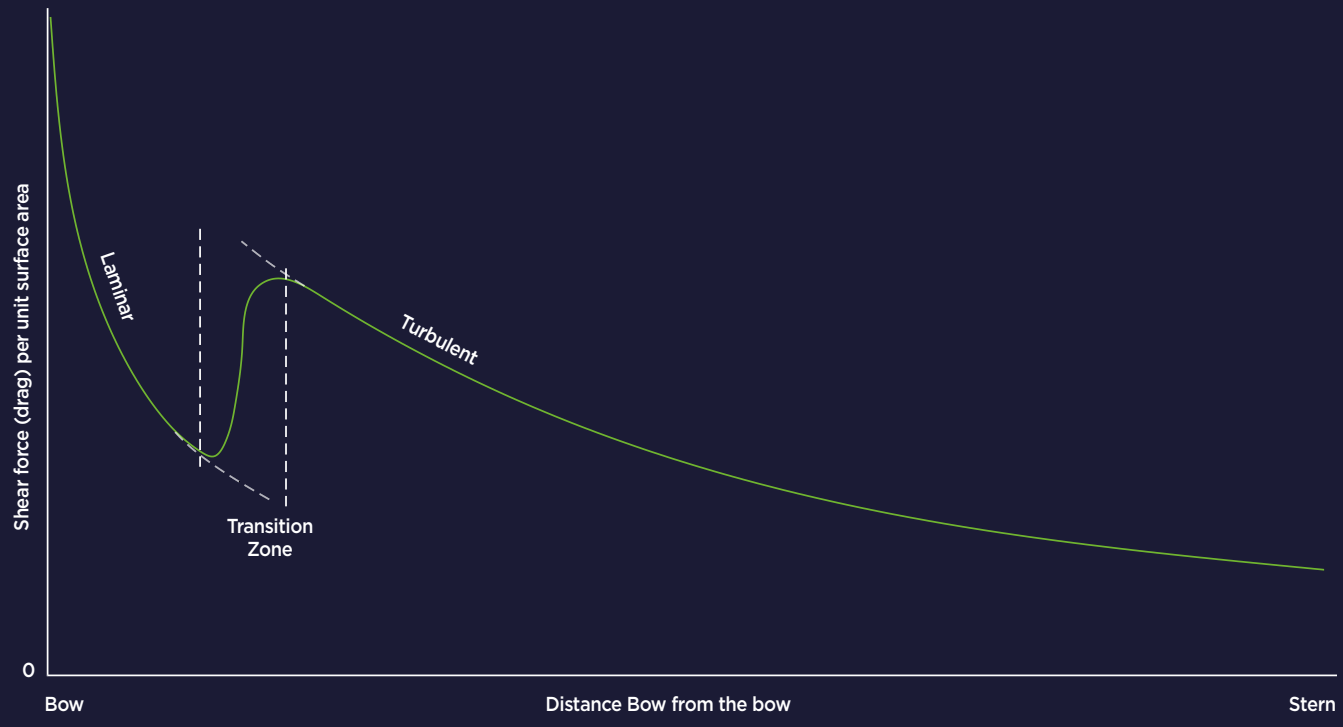


Fig.1 How hull friction changes from bow to stern (not to scale)

> Rowers should consider whether they are skilled athletes, keen to extract every last metre or second of performance, or galley slaves craving stable platforms.

forbidden by FISA! Riblets and denticles work by stabilizing the flows adjacent to the hull: Riblets anchor incipient vortices to the skin so they don't burst out into the boundary layer; denticles lift their trailing edges to block tiny local flow reversals which also initiate transition; suction skims the laminar layers before they can destabilize. Riblets and denticles are shown in Fig.3.

Hull design

We might also extend laminar flow by modifying the bow form, but even slight turbulence in the water, or specks of floating matter adhering to the hull, can defeat this. We could develop miniature variants of ships' bulbous bows which, if well-designed, might reduce wave drag by more than they raised hull friction. But hull design is inevitably a compromise of many factors to give good performance across a spectrum of race conditions, so there can be no perfect solutions.

One way to reduce form drag and wetted surface is to reduce hull beam and increase draft. This would reduce stability, but rowers should consider whether they are skilled athletes, keen to extract every last metre or second of performance, or galley slaves craving stable platforms.

Actually, it's not quite that bleak: a later article will explore how foils enhance stability, steering and performance. In rowing a foil is any well-shaped flattish object interacting with the water, and should include oar-blades, fins (skegs) and rudders. A broader definition covers wings, sails, keels, wind and water turbines, propellers and the blades of gas and steam turbines. But for now we are discussing hull drag.

Shells face serious performance barriers. A hull shorter than your speed potential hits a wave-drag barrier where it starts climbing its own bow-wave, although it's far less severe for narrow shells than for broader vessels. However, it is within our power to erode another of those barriers – drag's steep sensitivity to boat speed.

Making effort count

Fluid drag is proportional to "speed squared" – 10% faster means 21% more

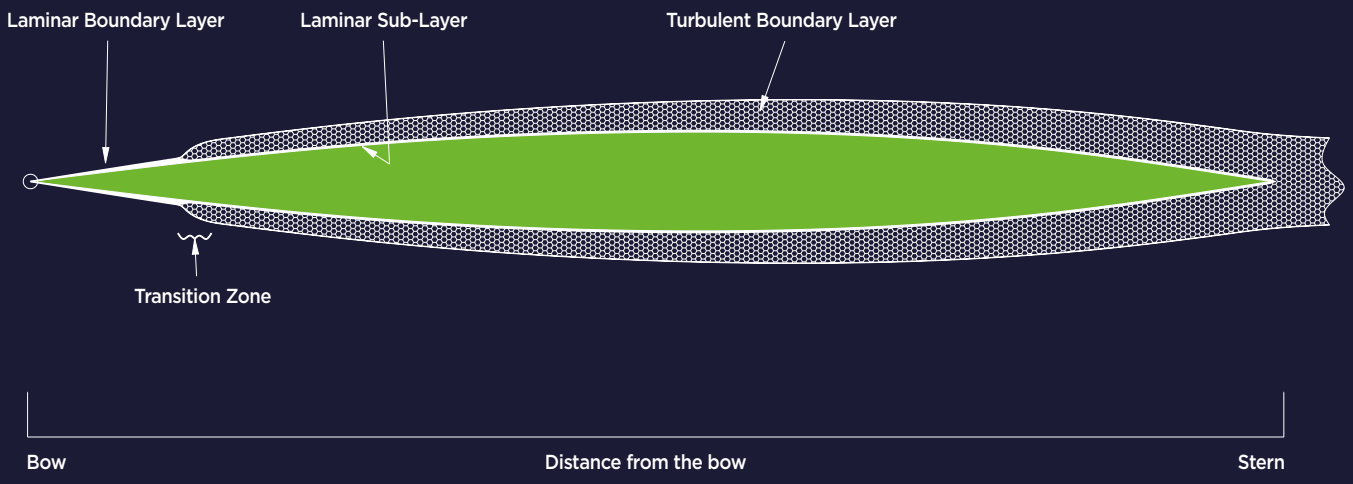


Fig.2 How boundary layer changes from bow to stern (not to scale)

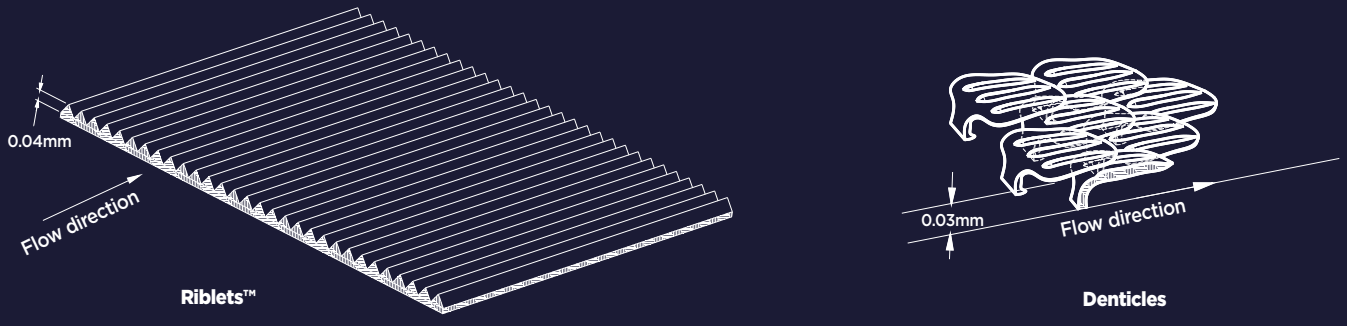


Fig.3 Illegal drag-reducing skin modifications

drag. But the power absorbed by drag is proportional to "speed times drag", so 10% faster means working 33.1% harder. Shell speeds oscillate by +/-20% (or more) over each stroke cycle and we're often exhorted to "accelerate the boat every stroke", encouraging even greater speed surges. But if for 50% of the stroke the boat moves 15% faster than average while for the other 50% it moves 15% slower than average, then you'll work 6.75% harder than for a constant speed.

Reduce those speed oscillations (through technique adjustments) by enough to save just 1/6th of the parasitic energy losses they cause and you'd go 0.3% faster, gaining six metres or one second over 2k. Most crews could do that – rowing more smoothly, reducing coxes' pain and maybe gaining even more as the smoother motion dissipates less energy into wave generation.

You could even gain by adding weight to the boat! We're told that "lighter means faster", but that's simplistic (although an inch off the waistline really might mean faster!): your own mass moves over the water at near-constant velocity as the boat oscillates under you. Adding just 2% (2kg) to your eight's weight will reduce its speed oscillations. It will sit only 0.35mm deeper, its wetted surface will increase by 115sq cm (0.1%), but drag from speed oscillations alone (about 6.3% of total water drag) will fall by over 2%. So while that 2kg raises constant-velocity drag by under 0.1%, the reduced oscillation cuts total water drag by 0.13% – a net drag reduction of 0.03%. Indeed, it can be shown that a zero weight boat will actually be slower than one weighing rather more, and it's possible that the optimum boat weight for a given crew would be above FISA's weight limit!

British Cycling built success through the "aggregation of marginal gains". Formula 1 teams research every aspect of equipment, pit crew and driver performance. I've shown several areas where a more analytical approach can save seconds for every rower, and there's more to come. If you mean to win, then question and study everything – including what I write here! ROW360

CHICAGO'S WMS BOATHOUSE

POWER ENDURANCE ARCHITECTURE

WORDS RONALD GRAY-CHEAPE // **PHOTOGRAPHY** STEVE HALL ©HEDRICH BLESSING

Rowers are ruthlessly competitive individuals, so it is no surprise that in the land of the free, where capitalism as we know it now was born, rowing clubs are competing not only on the water but up the bank in the architecture of their boathouses. Contrast this to London. East of Waterloo bridge the riverside is stacked with gleaming new structures of steel and glass where a capitalist city of its own is still growing, but make your way upstream to the rowing stretch of the Thames through that north arch of Putney Bridge and, apart from Thames RC's refurbished facade, you will pass little but deeply conventional drab 19th century boathouses.

On the Chicago river, boathouse architecture is becoming a genre of its own, with the glorious design opportunity presented by four new boathouses that are included in the master plan for the renewal of the city's waterfront. The mayor has decided that rowing is to lead in the transformation of the river from sewage canal to a hub for recreation and water sports – its "next recreational frontier". What better tools with which to drive change: architecture is a frighteningly powerful tool. As Steen Eiler Rasmussen says, "No other art is so intimately connected with man's daily life from the cradle to the grave," – with its ability to both enhance and destroy environments, and rowing, once you are involved, is frighteningly powerful in enhancing (and perhaps also destroying) your life.

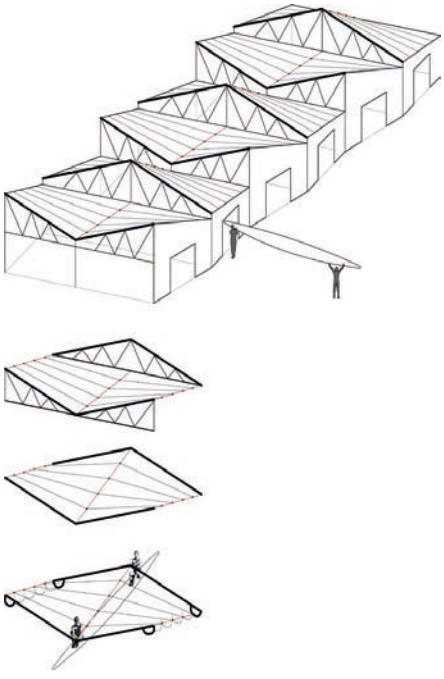
The city of Chicago's growth came from feeding off its river's industrial offerings. An occurrence that those of us that row on tidal waters are accustomed to twice-daily, the Chicago River had →

Clockwise from top left: the WMS boathouse at dusk; oars laid out on the dock; the ergo "clerestory"; the design concept ©Studio Gang Architects; the Chicago Rowing Foundation W8+ prepare for training.

its flow completely reversed 100 years ago so that instead of the effluent-laden water flowing into Lake Michigan from where the city's water supply was taken, it ran into a series of canals that aided the burgeoning shipping industry. However, the affliction of residential and industrial pollution oozing from the urban grain into the waterways continued. The move for renewal has been spurred by a grant of almost $1 million from the United States Environmental Protection Agency. The first of the four boathouses was the Ping Tom Boathouse by the Chinatown neighbourhood opened in June 2012. Studio Gang, who describe themselves as a "Chicago-based collective of architects, designers and thinkers whose projects confront pressing contemporary issues" and who have worked with post-industrial riverfront sites, were commissioned to design the next two.

The second, the WMS Boathouse at Clark Park, was opened on 19 October 2013. This is now the home of the Chicago Rowing Foundation (CRF) which, with its focus on youth rowing and adaptive rowing programmes, satisfies the project brief in widening participation and drawing Chicago's population towards its freshened-up river. The boathouse's saw-tooth roof pays homage to the city's industrial past: a 22,620 square-foot rowing factory. On the approach, an oblique view shows an array of jutting silver peaks like wave crests on a turbulent ocean's surface or from Saturday morning launch drivers on the RIVER. The rowers' orthogonal riverward view, however, exposes more direct rowing references:

"The architecture is meant to visually capture the poetic rhythm and motion



of rowing," said Jeanne Gang, founder and principal of Studio Gang Architects.

While being taught to row, the ratio of recovery to drive was drilled into us by the mantra 'pineapple, pineapple, pineapple CHUNKS', and is cleanly echoed by the smooth fruity upward curving slope that then cuts down abruptly. The form was derived from the time-lapse motion of rowing (*see rendering above*).

The matte zinc cladding modulates the hues of river and sky and augments the warmth of the timber lining that is visible through wide cut-out apertures – surely a welcome sight after a long winter outing. There are two separate structures that, despite the project's tight budget, share the rich warm ply lining. The boat storage building, unusually, is substantially naturally lit by daylight reflecting down through its factory-esque roof. Its neighbouring building, the two-storey field house, holds ergometer machines, communal space, an office for the Chicago Park District and row tanks.

Betsy Trevarthen, director of Chicago Rowing Foundation, sees the tanks as a key weapon in widening participation: "The use of the indoor rowing tank has been key to introducing both these populations to rowing in a safe and protected manner. It's allowed us to be very hands-on with new rowers, adequately preparing them for the water." →

With the tanks on the ground floor, training on ergs is allocated to the first-floor level. Bashing up and down on an erg means discomfort, so it is most considerate of the architects to make this such a bright, airy space. It is from here that the Douglas Fir ply-lined roof form can be enjoyed; the structural truss shapes alternating between an inverted "V" and an "M", creating flowing double curves, echoing water's surface to carry those training up and down the slide. This reflects southern light into what the architects refer to as building's "upper clerestory"... imagine an ergo clerestory rather than an ergo room! The timber-clad finish is like the smooth veneered underside of a giant Carl Douglas – the essence of craftsmanship. Ergos can be cleared so as to make it available for the community as an events space.

Trevarthen is delighted that, thanks to their facilities, "we have been able to offer more community programmes than ever before". The roof form is also a part of the project's environmental strategy as the high-level glazing allows natural ventilation and warms the floor slab of the structure in winter, and ventilates in summer to minimize energy use year-round.

At Clark Park membership has soared by 33% over the last year. Following its completion, Trevarthen is

delighted with the club's progress: "Our 2013/2014 season was a great success. Our lightweight women placed 11th at Nationals; varsity men seventh; varsity women eighth. A lot of the success can be attributed to the amenities of the facility (tank, erg room) which allowed our team to practice no matter what the weather was."

The power and endurance of the growing numbers of rowers of the CRF training at the WMS Boathouse is fuelling the larger movement toward the ecological and recreational revival for the future of the Chicago River. It is a powerful living symbol of the enduring connection between city and river. **ROW360**

Bashing up and down on an erg means discomfort, so it is most considerate of the architects to make this such a bright, airy space.

WHO'S THE BOSS?

WORDS DAVE ALCOCK

Some reflections on the psychology of the coach-rower relationship

Issue 1 addressed the question of relevance of sport psychology to rowing. In Issue 2, I highlighted a range of psychological factors linked to optimal training. In this issue I will consider what is, for most rowers, one of the most (if not *the* most) important elements of the journey to optimal performance and success: the coach-rower relationship.

There is a wealth of evidence highlighting the power of the coach-rower relationship. It can be a force for good in promoting self-efficacy, coping skills, and continued motivation, or a potential negative force leading to stress, disengagement and dysfunctional attitudes.

Pause for a moment and consider the importance of the coach-rower relationship to you. On a scale of 1 to 10, with 10 being "extremely important" and 1 being "not important at all", what score would you give? My suspicion is that the majority of rowers would score towards the 10 end of the spectrum, highlighting the fundamental significance of the coach-rower relationship.

Before we explore the relationship in more detail it is worth noting firstly that many rowers have no choice in terms of coach selection; and secondly, that whilst much of the research focuses on a dyad (two-person interaction), the findings have relevance to the wider coach-team relationship (fours, eights, etc.).

So when we refer to this relationship to what exactly are we referring? One definition (Jowett →

& Poczwardowski, 2007) defines the coach-athlete relationship as "any situation in which a coach's and athlete's thoughts, feelings, and behaviours are interrelated." In this sense, the relationship is a dynamic process and not a fixed entity. It needs regular attention and careful, sensitive nurturing.

There are many different ways of conceptualizing the coach-rower relationship. One current approach which can be very useful as a starting point for reflecting on your relationship with your coach suggests that closeness, commitment and complementarity are key elements in shaping optimal performance.

"Closeness" includes mutual respect, trust and "caring" for one another. "Commitment" includes satisfaction of both parties, dedication and sacrifice. "Complementarity" includes how the coach and athlete complement each other's strengths in relation to roles, tasks and ability to adapt.

These are referred to as the 3 Cs. There is a fourth element to this model, namely, co-orientation – which refers to the level of coach-rower consensus in relation to the 3Cs. Not surprisingly, this has been referred to as the 3+1 Cs model of the coach-athlete relationship (by Jowett, 2007).

So how might one use this at a practical level? Well, whether you are considering this from a coach or a rower perspective, it provides you with the tools for a structured and productive reflection on the quality of the relationship. It doesn't take a great leap of the imagination to recognize that a lack of mutual respect and trust is counterproductive within such a significant relationship. Similarly, an imbalance between the amount of sacrifice, dedication and perceived satisfaction on the part of the coach/rower(s) is not optimal. Finally, if the strengths of the coach/rower(s) do not work well in tandem, then the relationship again, is sub-optimal.

Staying with the practical approach, the follow-up question might be, "If there are areas that could improve in terms of the relationship, how might we address them?" The key here (as with many solutions in terms of sport psychology interventions), is communication. I've listed some suggestions that take a coach's perspective, but they can easily be utilized by those being coached. Indeed, they can also be useful in terms of the rower who is acting as a mentor for a less experienced member of the team. I've also adapted the research findings (from Cox (2012) and Williams (2013))in order to fit more closely to the rowing experience.

- Recognize individual differences among rowers (in any interpersonal dynamic it is possible that there might be differences in experience, culture, upbringing, class, etc.).
- Use a style of communication that is comfortable for both parties.
- Be honest, sincere, and genuine, but never sarcastic. Attend to what should be a clear distinction between performance-oriented communications and "banter".
- When suggesting a change in behaviour, provide a clear rationale.
- Be generous with praise and encouragement. It would be a mistake to underestimate the power of positive reinforcement.
- Make sure that there is a clear match between non-verbal and verbal communication (attend to the axiom "Your actions speak louder than words").
- Exercise self-control at all times.
- In relation to feedback, focus on enhancing the autonomy of the rowers (this will feed into developing and nurturing intrinsic motivation).
- Some might find the following a little challenging, but developing the skills of empathy (seeing the world from the other person's perspective), will reap positive rewards in terms of a productive relationship.
- Openly discuss communication needs and shortcomings with individual rowers, as well as with the team as a whole.
- Recognize the role that stress plays within the team dynamic. Emotional distress as a result of, for example, losing, equipment failure, or poor individual performance can interfere with clear communication and therefore needs.

> The relationship is a dynamic process and not a fixed entity. It needs careful nurturing.

It should be clear, having read this piece, that the title "Who's the boss?" is written with tongue placed firmly in cheek. There will always be exceptions to the rule, and there will be those situations where a "boss/employee", "drill sergeant/private", "master/servant" relationship seems to yield positive performance results. However, the overwhelming research evidence, alongside my 20+ years in the field, all point to the optimum coach-athlete relationship as being a dynamic process in which high-quality, mutually respectful interpersonal relationships are allowed to flourish. ROW360

Further reading

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Jowett, S., and Poczwardowski, A., "Understanding the coach-athlete relationship", in S.Jowett & D.Lavallee (eds). Social Psychology in Sport (Champaign, IL: Human Kinetics, 2007)
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GERMAN SQUAD PROFILE

Changing

Above Andre Sieber (bow, bottom) and Philipp Naruhn comnpete in the M2- in Seville.

a Winning Team

WORDS HOWARD AIKEN
PHOTOGRAPHY OLIVER QUICKERT

Life is tough at elite level in any sport, but it is particularly tough at the top of German rowing. In May 2012 at the World Rowing Cup in Lucerne, the German women's quad (Julia Richter, Carina Baer, Tina Manker and Stephanie Schiller) set a new world best time of 6:09.38 in their heat. At the London Olympics, just a couple of months later, the German women's quad won silver, but Manker and Schiller had been replaced by Britta Oppelt and Annekatrin Thiele. The idea that you shouldn't change a winning team is not widely held at the top of German rowing, and according to Mario Woldt, sports director at the German Rowing Federation, that isn't going to change.

"Every rower in the national squad knows he or she has to compete for their position in any boat," he says. "We won't even begin deciding on our Olympic crews until we see the results from the Rowing World Cup in Lucerne in 2015." The German rowing squad has traditionally relied on an established and impressively executed strategy of strength in depth. Whether at senior, under-23 or junior level, the German squad has for decades had a wealth of competitive talent available to it in all the Olympic rowing events. "Obviously our chances will be higher in some events than in others, depending on how other countries perform, but like the US and GB teams we will be competing in all 14 Olympic boat classes", says Woldt.

It starts with the juniors...

Underpinning the performance of their senior squad is a fiercely competitive and ambitious cohort of junior rowers. Germany's junior squad have had some truly spectacular successes in 2014. At the World Rowing Junior Championships in Hamburg in August, Germany was the only country to have boats in all 13 finals. At that event they also won more medals than any other country, including seven gold medals (in the men's and women's eights, men's and women's single sculls, men's four, men's quadruple sculls and →

men's double sculls). A performance like this does not happen by accident and, as Woldt (below) pointed out, "What we saw in Hamburg was not new." Germany's junior rowers had also won impressively the previous year at Trakai in Lithuania, beating Romania, Italy, Australia and the United States, and winning eight medals, including four golds.

With most of their senior rowers still in their early to mid 20s and their juniors about five years younger, German selectors look likely to have plenty of talent to choose from not just in 2016, but in 2020 also. Woldt is very much aware of the benefits a strong junior squad brings to German rowing. "We have a good age mix across the squad," he says, "and while our juniors are not yet physically equal to our seniors, they have great potential."

...And their clubs

The roots of German rowing success can be traced back to their local clubs. "We have a really well-developed club system, so we have a lot of rowers to choose from," says Woldt. With some 600 clubs and over 82,000 members, the German Rowing Federation supports touring, masters, club, league and high-performance rowing and, unlike some sports, rowing is still growing in Germany. In a virtuous circle of achievement, Germany's ongoing record of success at national level in rowing has maintained a steady flow of new recruits into the sport at club level. From that pool of talent some 250 to 300 rowers are selected for the national squad. These rowers train with their home clubs for most of the time, "But we also bring rowers together at our national training camps before the big Championship events", says Woldt. The German Rowing Federation also holds several training weekends during the year to evaluate their athletes, with the final selection for the World Rowing Junior Championships being made at the German National Championships.

"WE HAVE A GOOD AGE MIX ACROSS THE SQUAD AND WHILE OUR JUNIORS ARE NOT YET PHYSICALLY EQUAL TO OUR SENIORS, THEY HAVE GREAT POTENTIAL."

Gold for the big boats

As reigning Olympic gold medallists in the men's eight, it is not surprising that Mario Woldt describes the German squad as 'big boat' specialists. He is clear that they fully intend to hold on to their gold medal position in 2016. That said, at the recent World Championships in Amsterdam the German eight was narrowly beaten by the GB boat. The winning margin was just 0.66 seconds and the German boat was gaining in the final 500 metres, but it may yet prove significant that

Main Marcel Hacker (M1x) at the World Championships in 2014

Inset LW4x (L-R) Katrin Thoma, Judith Anlauf, Wiebke Hein and Leonie Pieper. Photo by Oliver Quickert.

the average age of the rowers in the German boat was almost two years younger (24 as compared to 26 in the GB boat). Woldt can't yet say who will be in the German Olympic eight, but whoever they are, they'll be the best his team can produce. With Rio now less than two years away and a cadre of hungry young sweep-oar rowers competing for a place in that eight, expect short odds on another German gold medal in the M8+ at Rio.

Adaptive/para-rowing

Para-rowing (what used to be called adaptive rowing) is another growth area for the German rowing squad. The 2016 Paralympics will certainly be the biggest yet – 12% bigger in terms of the number of medal events than London 2012 – but there will only be four rowing disciplines: men's single sculls AS (arms and shoulders), women's single sculls AS, mixed double sculls TA (trunk and arms) and mixed coxed four LTA (legs, trunk and arms).

Given the complexities of athlete classification in para-rowing (the FISA para-rowing classification application form is a 10-page document on its own) selection is a complex and highly individualized process. Building para-rowing as a sport is the priority for the German Rowing Federation at present. "We want to promote para-rowing and recruit more para-rowers to the squad, which is currently quite small," says Woldt. "The rules on who can compete in which boats and with which disabilities are complex, but we are actively recruiting more adaptive rowers into the sport and look forward to fielding a very competitive squad".

German rowing's Golden Age?

With its current roster of athletes, German rowing is undoubtedly in as good a shape as ever for the next few years. Looking beyond 2020, however, the picture is less certain. While club rowing is still growing in Germany, high-performance rowing is expensive, and clubs are beginning to find this a problem. At present there is no obvious solution to this cash shortage but unless one is found, the high-performance 'elevator' which takes promising club rowers up into the national squad will get significantly smaller.

In addition, secondary-level education reforms in Germany have resulted in changes to the traditional German school timetable. While the school day used to end in the early afternoon (and so left plenty of time for sports), it is being replaced by a more conventional working day (which does not). Other countries have of course learned to live with this tension between the demands of young people's sport and schoolwork, but it is a new and unpredictable factor in the future of German sport.

It is possible, therefore, that today we are looking at a Golden Age in German high-performance rowing, a uniquely favourable alignment of funding, participation, expertise and success. Germany will remain hard to beat in 2016 and 2020, but their established formula for success may prove difficult to sustain into an increasingly competitive future. ROW360


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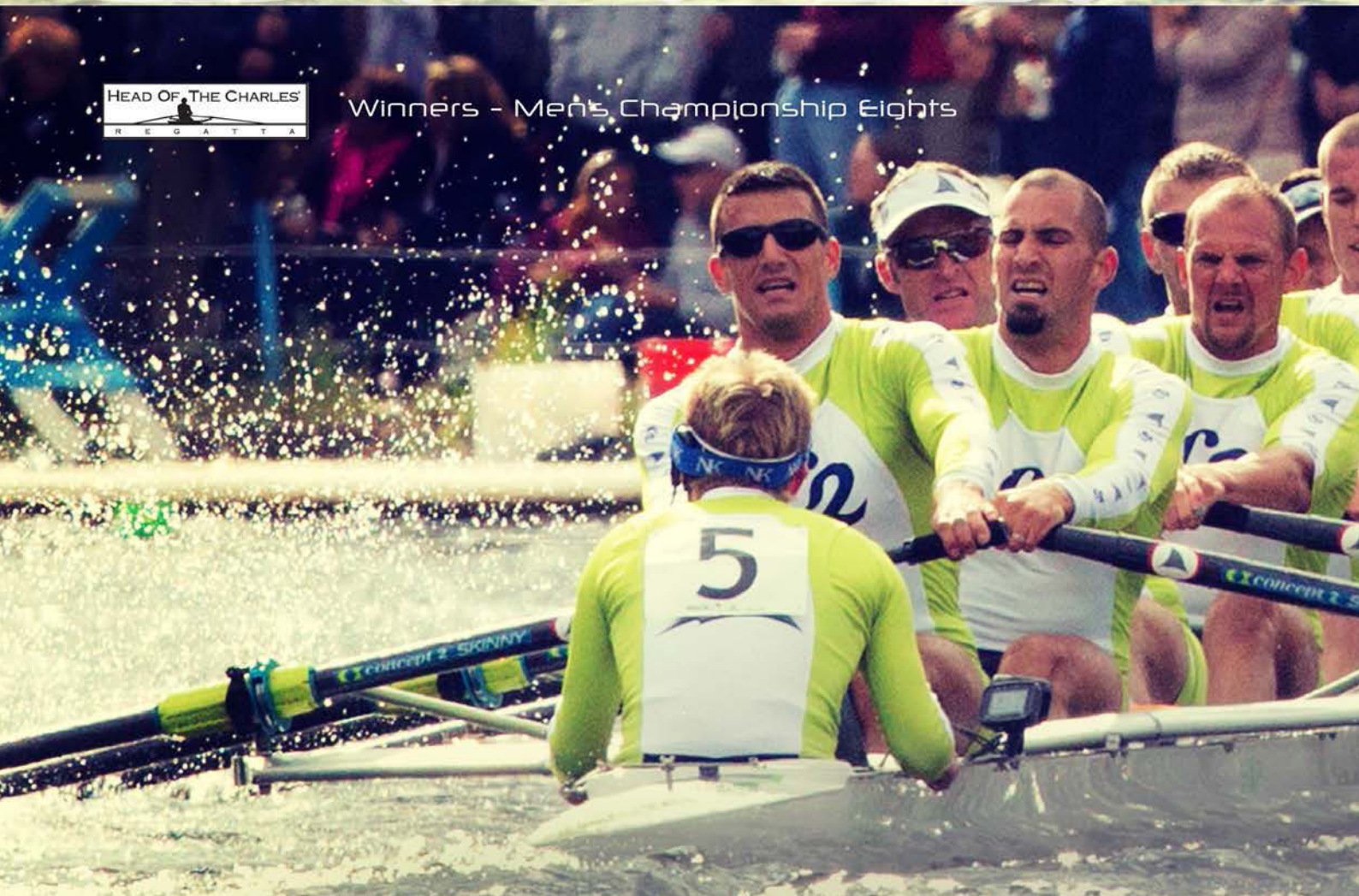
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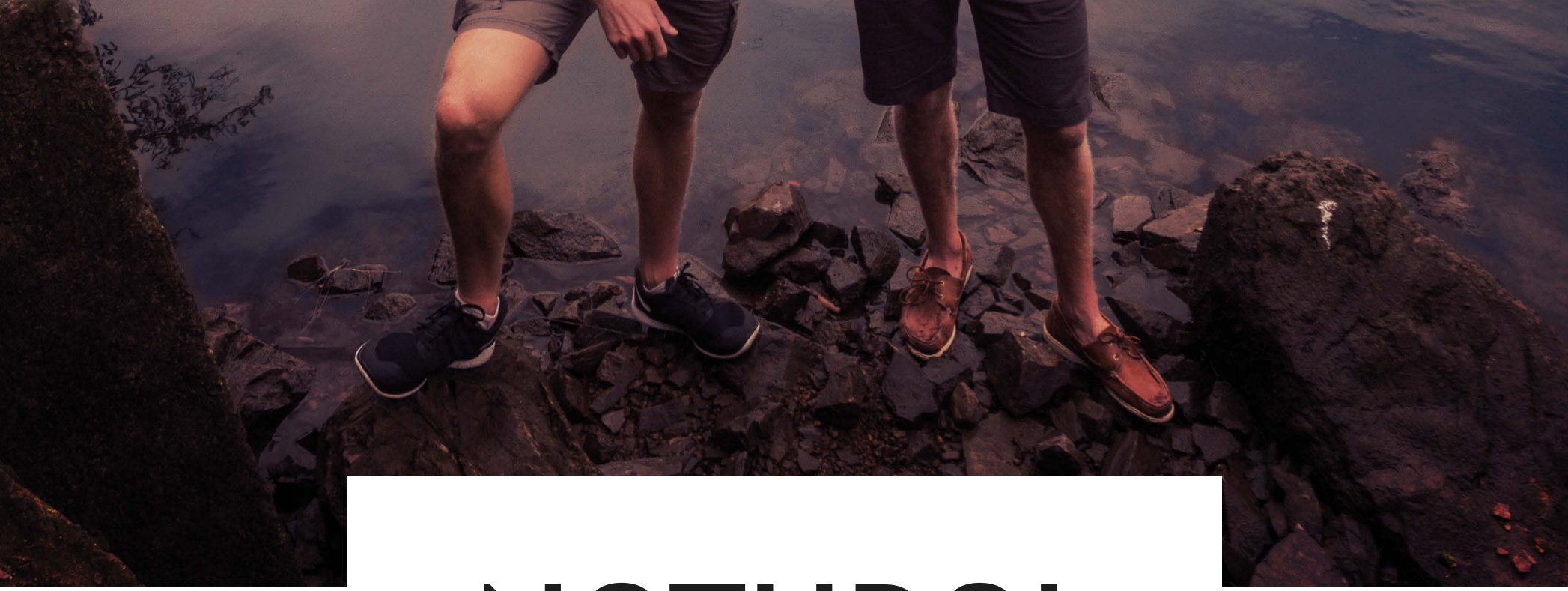
SNAPSHOT

World Rowing Coastal Championships

Thessaloniki, 16–19 October 2014

A women's coxed four (CWx+) battles the waves at the **World Rowing Coastal Championships**, held at the port city of Thessaloniki in Greece. Conditions were choppy for the finals, which French teams dominated in the women's events, taking the coxed four and the double sculls. Compatriot Jessica Barra led a clean sweep of the medals in the singles. In the men's races Peter Borg of Sweden repeated his winning ways from the 2013 championships, winning by over a minute, and teams from Italy won both the men's double and quadruple sculls. **ROW360**

PHOTO: IGOR MEIJER



NATURAL BORN WINNERS

The World Rowing Male Crew of the Year for the second year running, NZ's Hamish Bond and Eric Murray seem all but unbeatable.

Words RACHEL QUARRELL *Photography* HAMISH BURSON

Hamish Bond and Eric Murray are the best rowers of their generation.

Go on, disagree with that.

Well, of course you could. There are too many ways to measure "best" in rowing — by technique, by strength, by sheer speed in a multiplicity of different boat classes. Longevity, adaptability, coachability.... Oh, and pure results.

No other active senior international can match the winning streak that Bond and Murray — "the Kiwi pair" to most of the rowing world — currently possess. They claim to have lost count of how many consecutive unbeaten races they've had in the pair, but it's at least 55 in FISA events, 11 at Henley Royal Regatta and a minimum of six victories together in domestic New Zealand competition. They've now won 19 FISA M2- titles on the trot (world cup, world champs or Olympics), which far outdoes Redgrave and Pinsent's tally between 1991 and 1996, hold world best times in two boat classes – coxed and coxless pairs – and have the latter also at world cup and Olympic level.

> After winning races now we're just living up to our own expectations.

It can come as something of a surprise to remember that they've only won one Olympic medal each: the London 2012 gold. Would you bet on them failing to win another in two years time in Rio?

In the absence of any other definite pairs rivals, Murray and Bond's biggest threats are probably their own minds. "After winning races now we're just living up to our own expectations," says Murray. "When we first won some races back when we were in the four and then the pair it was 'Awesome, we've done something we've never done before'," says Bond. "It was the same with the [2012] Olympics – there was a huge sense of elation winning that gold. Now we meet our expectations and it's just 'Cool. Pat on the back. Next thing!' That's the position we've put ourselves in – a lot of our philosophy at the moment is about how to challenge ourselves and do different things in training and racing. Just motivating ourselves to get better, because that's about the only thing we can do from here."

Hmm. Challenges. They inadvertently engineered a good one after the 2012 Games, returning to training so late that it was a rush to be ready in time for the 2013 world championships in Chungju. "We thought it would be hard starting over again with a four-year cycle," says Bond. "But it wasn't too bad with three to four months off, very little rowing. I did a bit of training, Eric had his charity boxing gig [he lost to a rugby league man-mountain], and we were even later back starting than we'd planned. There wasn't even time to think about were we enjoying it: it was more, 'Sh*t we're stuck in behind the eight-ball here — we'd better get cracking otherwise we're going to embarrass ourselves!'"

They shouldn't have worried. The gold in South Korea was their fifth consecutive season title, and then they came up with the coxed pairs challenge, stretching themselves to win that with under-23 steersman Caleb Shepherd in between the semi and final of the 2014 worlds pairs event in Amsterdam. It was a hugely satisfying race, Murray and Bond slicing a whopping 8.9 seconds off the 20-year-old best time to bring the event back to a serious standard and encouraging several strong entries in response. So what are they planning for 2015 as a new challenge? "To integrate some weights," replies Bond.

Hang on, is that for real?

(Both Murray and Bond are not above trying to pull interviewers' legs.) →

Above Hamish Bond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Above Eric Murray with son Zachary

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No, he's not kidding. For those reading this around the world, yes it is true, the @kiwipair have trained 95% of the time on the water for years on end. "I can flat out say I have not lifted a weight for four years, and I haven't lifted heavy weights since 2008, although you couldn't tell from looking at my biceps," says Bond. "It's not a New Zealand thing, just what we've done."

This was mostly due to Dick Tonks, the high-profile coach who guided most of the recent Kiwi rowing success stories, before stepping down from the lead coach role last year. Tonks's "miles make champions" philosophy was quite literal, with very few weights or even erg sessions to break the monotony. "The only time we'd erg was if Karapiro was unrowable," says Bond. "If we rowed a couple of ks and sank, we'd come back and go on the ergs. It's an asset to be able to work on a rowing machine and not hurt your life!"

"It was bloody hard doing it with Tonks, just rowing every session," says Murray. "We thought, if we're going to do this again, we've got to make it more enjoyable." Cue a more collaborative 2013 approach with their new coach, former Australian 'Oarsome Foursome' guru Noel Donaldson. "Noel still has power of veto and the final word, but we do have a dialogue," says Bond, "because the coach only has the outside perspective and sometimes the inside perspective is valuable. At younger levels the coach does know best and the athletes should just shut up and do what they're told. But we have done enough that it would be ignorant of a coach not to feel as if we had some value to offer."

So, on to 2015. "As part of moving forward, we're investigating incorporating weight training back into the programme. Not for variety, but we've got to try and find ways to go faster," explains Bond. "Maybe what we've been doing has worked for us in the past, but perhaps the rest of the world is on to something," he muses, as if discovering an amazing new idea. Time for "the rest" to get worried.

What drives the duo furiously forward is their own determination to push the limits – leading to the mile-wide

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not lifted a weight for heavy weights since 2008”

margins we are so used to seeing them win by. “It stems from a strong mentality of not just trying to get a length but trying to get more and more and push out on people,” explains Murray. “If we’re sick, or wake up with a cold, if there’s something wrong with us we still want to be in a good enough position to win.” An essential tactic in a small team, which Mahe Drysdale proved when he won the singles bronze in Beijing despite being horrendously dehydrated due to a violent stomach bug.

Pairs out there be warned: Hamish and Eric are not just trying to beat you. They’re training to be able to slaughter you even when they’re so sick they should be in bed. That leads us on to the subject of hurt, and whether they are better at conquering pain than most. “More like being stupid,” comments Murray with a snigger. “It’s the ability to be able to go there but then do it again and again,” says Bond. “It’s the people who can make that manageable who go well. We’re still doing stuff now we absolutely hate, and you wonder why you’re hurting yourself, but if you can manage the extent of that emotion, you’re able to do it again and again and it lifts your level across the board.”

“Training is basically a constant battle between your body and your mind, isn’t it?” says Murray. “Your body saying ‘let’s stop’ and your mind saying ‘let’s keep going.’ Sometimes you just get your back up and suck it up and feel good suffering, but each person’s pain barrier is unique. The more you can do it in training and the better you get at handling it, the more likely you are to repeat it in racing.” →

So is it easier to cope with pain in a race? "Marginally, but I don't think you will tolerate it if you haven't done it in training," says Bond. "You may think you've raced really hard but you only race to the level you've already done before. It's not as if you can train like a pussy all year and then hope you'll go harder on race day. Maybe that happens for some people but not for either of us."

Given that they train on a natural lake which has a hydro dam at one end, with consequent unpredictable currents and flows, it's not surprising that Murray and Bond aren't too obsessed by numbers and stats. They admit to having gone under world record pace over 1000 metres, but not yet over 2km.

"Records are nice to achieve and a good benchmark, but it's really your places against other crews which count," says Bond. "You can say we broke six minutes in the pair but for all you know another crew did better, and it doesn't mean anything if there's nobody else in the race." They have spent some of their limited erg training time shooting for a few records: Murray had a go at the Concept2 hour record in 2011, and set a new distance of 18,728m, though it is not acknowledged →

Above Rigging the boat before going out for training

> "Mahe's name is unique and so people recognize it, but I've got the facial hair. The dude with the mean mo, that's who I am."
>
> ERIC MURRAY

as a world best since he preferred to do it on a Dynamic.

"When you're told you've got to do an hour's end of season test as hard as you can, you've got to make some sort of challenge towards it," he says. "If you've something to aim for, you'll do it quite well, instead of just going through the motions. Last year I did the half-marathon just for sh*ts and giggles, and Hamish did the hour." Both of those achievements are officially records.

Another way to keep themselves interested is their regular singles regime during the early New Zealand summer, culminating in a national championships race-off against Olympic and 2013 world champion Mahe Drysdale. Last year Murray led the final for 1200 metres, before Bond powered through to win. "Eric thought he was the fastest sculler until last summer," points out Bond. "We'll give it another crack this year. We can't just row the pair all year round — we'd go crazy." A bonus, of course, was beating the world singles expert, which Bond hoped might bag him an invitation to the scullers' Great Eight for the Head of the Charles. "I thought having been the only person not to be beaten by Mahe last year I'd qualify," he says. "But I was more or less told I wasn't wanted. So I decided to make my own crew." While Murray enjoyed quiet time at home with wife Jackie and three-year-old son Zachary, Bond's sweep super-crew beat several national eights, though they lost to the scullers by three seconds.

Murray is already plotting revenge in the single, while Bond has been spending time with the keen group who just won their second consecutive under-23 M8+ title, and who may for the first time in years create a sweep team around the golden pair. "We've been stuck in a no man's land, Hamish and I and a big gap to anyone else – nobody to row with," says Murray. "Now we've got about 12 former under-23 guys to bring along."

Sporting celebrities to some extent, they are recognized in the street more often if together than if apart, and get asked for selfies a few hundred times a year, though mostly at events. "Mahe's name is unique and so people recognize it, but I've got the facial hair," says Murray, the man with the Viking-like moustache. "The dude with the mean mo, that's who I am. If Hamish and I are together, people are more likely to get it." "Not much round here though," says Bond. "You've got all the rowers in Cambridge and now we've got the high-performance cyclists as well as a number of retired Olympians. People are quite chilled. We walk around and no-one bats an eyelid."

As well as Murray being the only father in the Kiwi team, he is also a closet romantic, having recently qualified as a marriage celebrant who can officiate at weddings. "I've done two, one someone I didn't know – they got my name off a list at the department of internal affairs – and the other an equestrian rider I knew from the Olympics," he says. "I'll probably look at getting into it a bit more. I haven't asked Hamish if he wants me to do his but it's probably a given." (That elicits a snort from the other end of the Skype line, and a Bondian quip that "I'd like there to be a few elements in my life which didn't involve Eric....")

I can't resist asking – what next after Rio? "There is a finish point, but we don't want to look at that moment. We just want to make sure we're getting there in the best shape possible," says Murray. "Obviously we might make a decision about what happens after that, but you don't just spurt it out beforehand. If you're sitting there thinking, 'This might be my last race, I'm gonna retire', you aren't thinking about the right things. When people do that, are they focusing on finishing rowing or on trying to win a race? I could probably keep going for another Olympic cycle quite comfortably, but at the moment I'm just focusing on that Rio gold and everything that's coming in between."

"We aren't necessarily tied to each other — there's no reason why if one of us has to go both of us have to go," says Bond. "But I don't see myself being an also-ran. If you do lose for a reason you take that on the chin, but if the fact is you're just not good enough to cut the mustard at the top level any more, well I don't think I'd be hanging around. I might change my tune, but that's my way of thinking at the moment." Luckily for New Zealand, it's not currently an issue. **ROW360**

GREAT EIGHT PLUS ONE

Coxing for eight of the world's top athletes

WORDS KATHERINE APFELBAUM // **PHOTOGRAPHY** RED BULL

Crowded around a table in a Harvard Square café, I steered an almond along the course map of the Charles River, reviewing course conditions, key points in the race, and tactics.

"As we turn onto the Power House stretch, we hit a brutal cross-headwind until Weeks Bridge."

At that point Vincent Muda at stroke interjected, "This is where we need to support X and protect his rib in the wind. Then, we get to the ** bridge and **** the fatties!" [Omissions for privacy and decency].**

This snapshot offers a brief glimpse into the mindset of the Great Lightweight Eight – protecting an injured sculler who in the next day would go back to being a rival of three-quarters of the boat, a desire to take on the best heavyweight scullers in the world, the fun of showing off for a camera, and a lightweight's love of pastries on the off season.

This autumn, the Great Lightweight Eight made its debut, uniting the senior lightweight men's doubles from Austria (the Sieber brothers, Bernhard and Paul), the Netherlands (the Muda brothers, Tycho and Vincent), Norway (Kristoffer Brun and Are Strandli), and the United States (Josh Konieczny and Austin Meyer) for the 50th Head of the Charles, a race of 4.8km of long bends, six bridges, 90-degree turns under bridges, changing conditions, and potential overtaking and clashing.

As the cox, I was both excited and a bit worried about language barriers, finding a common rowing style, and how four doubles would come together after two practices together for a long race. My concerns grew when the bowman took a stroke when I said "stern four row", and "2007" answered my question regarding the last time one had rowed sweep.

While a dream team on paper, what would it look like in the reality of the ultimate team sport? Austin's perspective was clearer: "Within such a heavily subscribed and always close event, there's not a lot room for egos. Everyone at the top at one point has gotten pipped at the line in a semi-final or have had a great race one day and then failed to repeat it the next. This fosters a lot of mutual respect between the athletes."

It turns out, the purest aspects of racing and sport – mutual respect, a desire to race like maniacs, and a deep appreciation for opportunities to race against the very best – transcended all differences.

Beyond a weekend of fun racing, this moment comes at a psychologically pivotal time in the training cycle and the Olympic quadrennial. Just over a month after the world championships, the scullers will next enter winter training for qualifying races for Rio. For these scullers, there are only two Olympic-class seats up for grabs and the pressure is on. In addition to giving the fatties a run for their money and showing the others the strength of support for rowing in Boston, Meyer aimed to tap into and grow the bonds between these competitors, different only by the paint on their oars.

"We are part of a very special group which meet each other about four times a year, and we are either hungry or thirsty, and in our undies with game faces on, or we are at the start line – ready to fight each other down the 2k course," says Strandli. "The fact that we go through all these stressful things together makes it really enjoyable to actually do something together in a slightly more relaxed environment."

The eventful race gave spectators a thrill and the rowers a moment of inspiration. It solidified and reminded them of the fun and camaraderie of rowing fast. And while they train separately, they share the same vision, succinctly described by Vincent Muda: "ROW LIKE HELL!"

After the 2014 World Championships, these doubles finished between third and 10th place, and all men are vying for seats and medals in Rio. However, the striking aspect of this group is that rather than seeing each other as barriers to their desired ends, their strengthening bonds make the effort even more worthwhile. Paul Sieber, the youngest of the group, spoke of this: "I think it's just great for all of us to know whenever we are standing at the start that we just have to give all we have, because there are five other boats in every race from whom we can be sure they will absolutely push us to our limits. We don't have to row against someone else, we just push everything out of us, give everything we have and see in the end how far we have gotten in our own development and what more we have to do in training."

These sentiments go beyond comments during a fun weekend of racing in the off-season. In this past year, these doubles have provided housing, meals, and even boats to each other during the world cups and Holland Beker regattas. Underlying everything is an honesty and integrity in each double's desire to win a race in which their opponents are at their best.

Grateful for the organization and care of the race committee, boat builders, and oar manufacturers, these doubles made this race a stepping stone, ready to push each other even harder to be hungrier, fast, and to row like hell. ROW360

LEFT Briefing the team in the cafe beforehand.

INSET Cox Katie Apfelbaum with her crew before the race in Boston.

Words HOWARD AIKEN *Photography* TOM LAKEMAN // HENNING LIPPKE

TRADITION INNOVATION BEAUTY

CARL DOUGLAS RACING SHELLS

The modern sport of rowing is blessed with some fine boat builders around the world. They are devoted to the sport and work hard to bring their customers the best equipment they can make. And yet – I have sat in boats with sharp slides which cut the skin on my calves, I have coxed eights with rudders the size of a credit card which simply don't work, and I have seen a blow from the tip of a passing blade open a long scar on a boat's skin, deep enough to keep it off the water for weeks. All of these things I have accepted as normal, because "that's just the way things are." Well, let me introduce you to a boat builder who doesn't believe "that's just the way things are", and has built the boats to prove it. Carl Douglas brings to his work an insistent focus on "fitness for purpose," and he won't allow a product out of his workshops if it fails that test.

Carl Douglas Rowing Shells (CDRS) builds high-performance singles, doubles and pairs. His high-tech moulded wood composite shells typically have a glossy wood-grain finish but it would be wrong to call them wooden boats. They are as stiff and as weatherproof as 100% composite boats, and they are built to win races – which they do, regularly. Unlike 100% composite boats, a Carl Douglas shell won't damage easily and as a result has a longer useful life.

Strength (+ beauty)

CDRS composite construction technology uses wood, laminated with Kevlar and epoxy resin under heat and pressure. Douglas argues that wood has evolved over 400 million years to withstand stress, fatigue and shock, and is strong, durable, light and mouldable. →

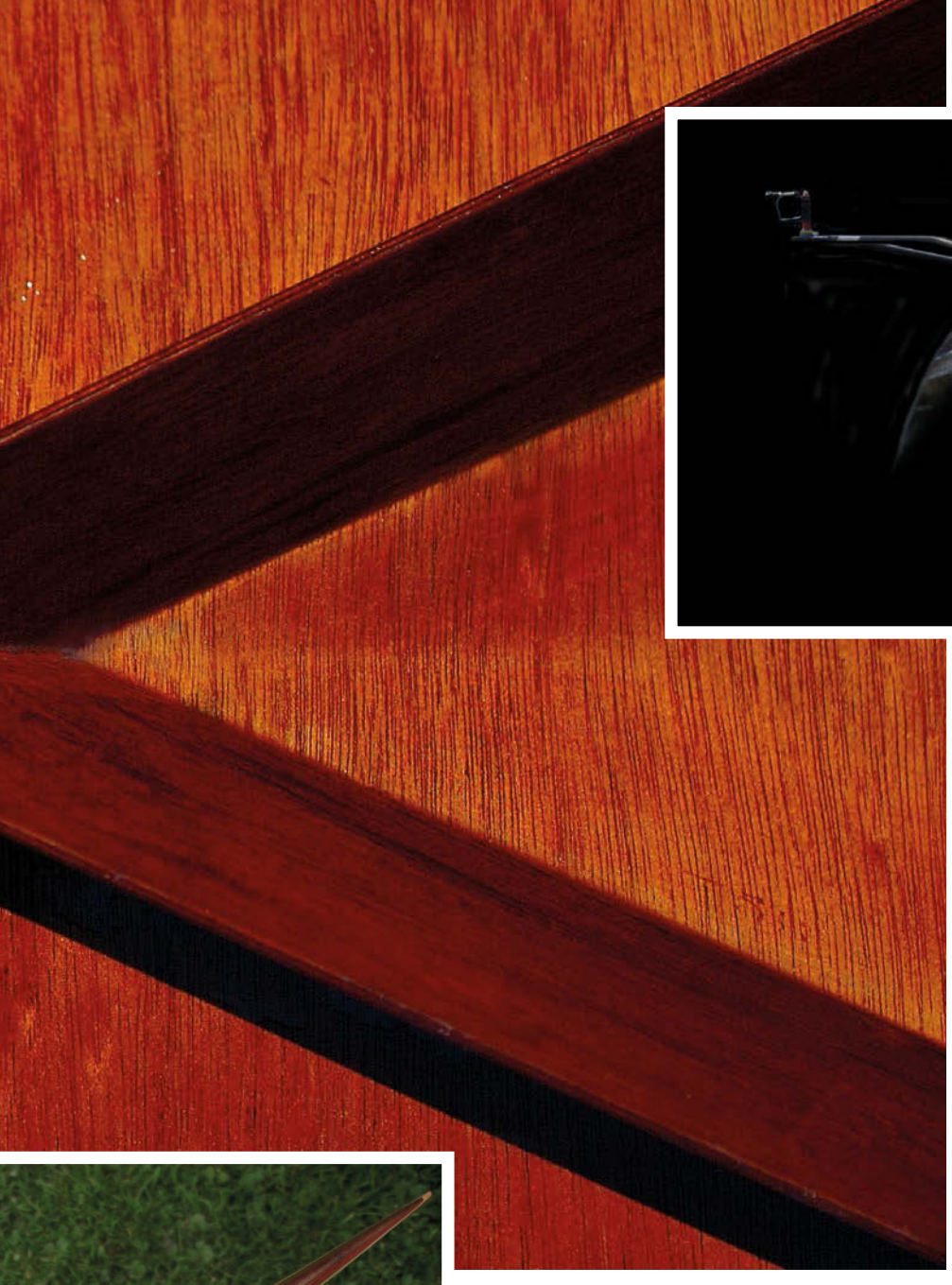
While he can produce a standard white (or black) finish for clients who wouldn't be seen dead in anything which looked like a wooden boat, he clearly enjoys crafting the outer skin of his shells to highlight the natural beauty of wood. While the glowing quality of the finish he and his team achieve has an undeniably old-fashioned look, the technology he uses would have been unavailable 50 years ago. His team is one of the very few who can combine the hand-crafted sculpting of real wood veneers with the computer-controlled precision of 21st century hull design. Clients can choose from a wide range of customized woods, including rosewood, maple, walnut and mahogany, and they can even get personalized designs inlaid in contrasting colours.

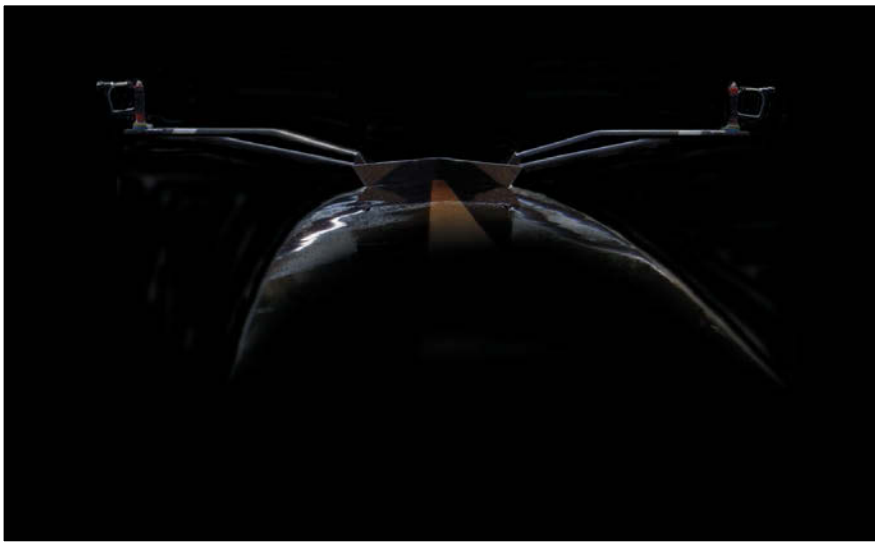
Carl Douglas Racing currently has the capacity to build about 50 boats a year, and each boat takes approximately three weeks from start to finish.

Re-engineering, from stem to stern

His racing shells are, however, only part of the story. Douglas is a Chartered Engineer and brings an engineer's analytical approach to all aspects of boat design. This has led him to redesign many "standard" boat parts to the point where everything from the bow-balls to the riggers, fins and rudders on his boats are now his own designs, and if you are willing to listen he can explain in layman's terms exactly why each of the innovations he has made improves the competitive performance of the boat.

One example I found particularly illuminating was his AeRowFin fin/rudder system. His innovation was startlingly simple. Whereas most boat makers are happy to fit fins and rudders cut from a flat sheet of metal, Douglas's design has an aerofoil profile (teardrop-shaped like the cross-section of an aeroplane's wing). As a result, it creates less turbulence when the rudder is used, resulting in more responsive steering, lower drag and greater boat speed. It is such an obvious improvement to the basic design that I was left wondering how on earth other manufacturers have got away with selling such comparatively ineffective and inefficient fin/rudder assemblies for so long. He was similarly dissatisfied with the riggers other suppliers were offering





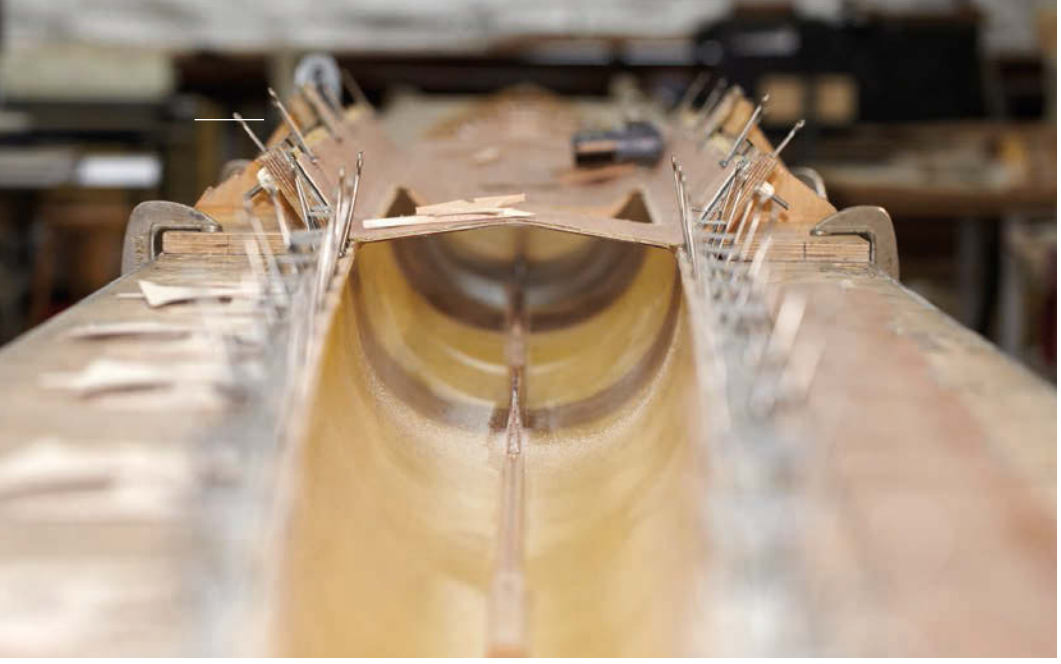
for his hulls, so he designed his own. Carl Douglas riggers are, he claims, a better combination of lightness, stiffness and strength than his original suppliers could offer and, moreover, they deliver these characteristics with a design offering lower resistance to both wind and water. He now supplies riggers and rudders for all types of sculling and sweep-oar boats. Both products were used on the GB men's eight which won gold at the Sydney Olympics in 2000.

More innovation (do you notice a pattern here?) can be found at the end of the riggers. While many coaches still adjust swivel pins with a hammer, CDRS has developed a precision non-slip mechanism for the independent adjustment of lateral and fore/aft pitches. I particularly appreciated the thought that went into the CDRS replacement for swivel height-adjusting washers. They are bright red, so you can see one if you drop it on grass or on a landing stage, and they float, so you stand a chance of retrieving them if you drop one while on the water.

Seats and slides get the same treatment – properly thought-through designs so that the slides don't cut your legs and the seats are still comfortable at the end of an outing.

So – do you own a CDRS boat?

The hard fact is that my club doesn't own any CDRS boats (although some individual scullers do) and I have to ask myself – why? CDRS boats are certainly premium products and they don't currently build fours or eights, but they are priced below their equivalents from the 'big name' manufacturers, and my club does buy their boats. In my discussion with Douglas he reminded me of a saying I remembered from my previous career in information technology. It was "No-one ever got fired for buying IBM", and I think that is the key to why CDRS build 50 boats every year rather than 500. Coaches and captains put their reputations on the line every time they buy a new boat. If they go with a big name and their squad still loses, no-one is going to blame the boat. If they buy a less well-known name (and bear in mind that most rowers don't have a wide knowledge or understanding of boats and boat-building) then they risk being blamed for their choice when →



their squad loses. So they'll pay more for the big name, because even if the rigging or rudder is not quite the best, and it's so fragile that it can be expensively punctured while being lifted onto a rack, most rowers won't mind, because they're sitting in a boat with a famous brand name. In the meantime, it's the scullers and small-boat specialists who really know about hulls and rigging who buy Carl Douglas Racing boats. And ill-informed commentators and spectators will continue to be surprised to see these "wooden" boats winning at regattas and head races around the world.

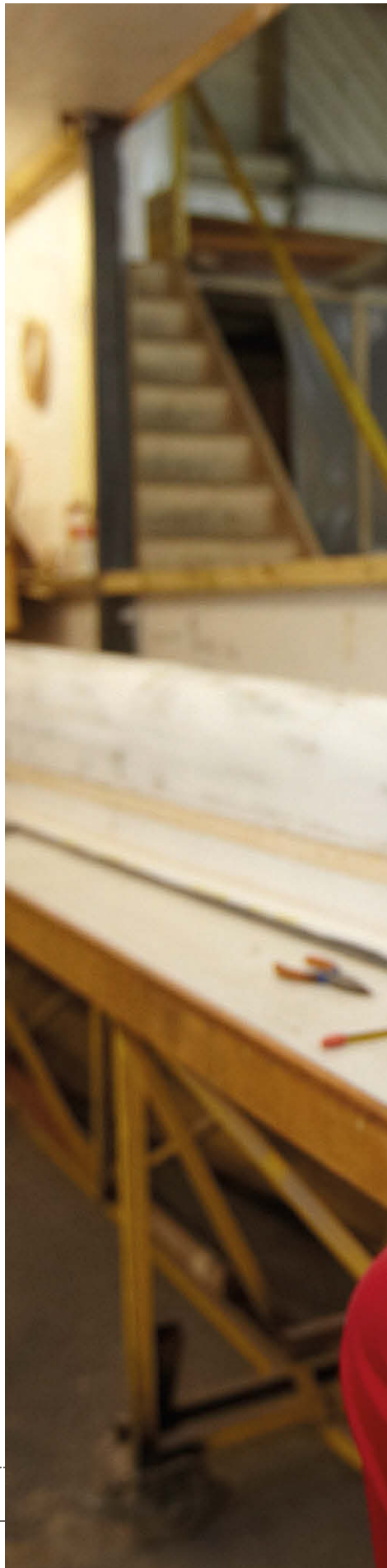
The company

Carl Douglas Racing Shells was founded in 1973 and is now the longest-established British boat builder. Over the past 40 years, Douglas and his team, based at the Harris Boatyard in Chertsey, near London, have built an enviable reputation for the quality of their products and their service to customers. Their engineering-led practice has pioneered innovation in all aspects of boat-building, from design to manufacturing and equipment. This and their expertise in computer-controlled machining have established them as a supplier of precision components to many of the 'big name' manufacturers. They build a range of high-performance singles, doubles and pairs to their own designs in wood/Kevlar composites, resulting in boats of outstanding "fitness for purpose" – robust, reliable and beautiful to look at. **ROW360**

For more information, visit carldouglasrowing.com

MANUFACTURER'S FACTS

1. Each single takes between 120 and 150 man hours to build, depending on client specification.
2. Pairs and doubles take about 50% more hours.
3. The wood used is harvested only at the tree's maturity and can be anything from 25 to 500 years old, depending on species.
4. Building in wood means the boats are ecologically sound:
   a) Harvested at maturity, the wood used is efficiently converted into veneers.
   b) The exceptional durability of Carl Douglas boats gives them an exceptionally long working life.
   c) At end of life they are easily recycled into energy and safely re-usable by-products.
5. A Carl Douglas single (including riggers) weighs 14kg, a double weighs 25kg.
6. Their wood is seasoned for two to 20 years before use.
7. CDRS only use wood bearing FSC (Forest Stewardship Council) certification.
8. While about 75% of a Carl Douglas shell is wood, they also use man-made materials including Kevlar, carbon, glass fibre, resins, ultra-tough man-made finishes and metals – but always with the objective of maximizing performance and endurance.



Rowing Champions League

RG Germania men and Crefelder RC women hold off stiff competition

WORDS OLIVER PALME
PHOTOGRAPHY ROWING CHAMPIONS LEAGUE

The world premiere of the Rowing Champions League in Berlin started with a bang, with high drama in the sprint finals. Frankfurter RG Germania won the men's final in dramatic fashion by beating their main rivals Crefelder RC by a canvas, with a winning margin of only half a second – recording the day's best time of 47.99 in the process. In the women's final, however, Crefelder RC beat Havelqueen Berlin by almost a length, in a time of 56.49, with silver medal-winners Havelqueen Berlin finishing in 57.51.

Four weeks after the rowing world championships in Amsterdam some of the best European clubs and universities competed at the historical East Side Gallery, directly in front of O2-World in Berlin. The Rowing Champions League takes place over a distance of 350m. Thousands of spectators lined the banks of the Spree from start to finish.

President Gerhard Meuer expressed his satisfaction with the event, despite the inclement conditions: "That was club rowing at its highest level. Exciting races with dramatic finishes and changing leads even during races over the short sprint distance of 350m. Unfortunately the weather was very changeable during the morning. However, the level of competition was outstanding."

Clubs and universities from 10 European countries qualified for the finals of the ROWING Champions League 2014 in Berlin. Leander Club, Lotto Bydgoscia Bydgoscz and Dukla Prag are knocking on the door of the traditional German dominance of this racing format, which results from the Germans rowing regularly in the Ruder-Bundesliga. **ROW360**

BELOW The men's eights race against the picturesque backdrop of Berlin's Oberbaum bridge.

Results
(Top 10)

MEN

1. Frankfurter RG Germania (GER)
2. Crefelder RC (GER)
3. Berlin Achter (GER)
4. Lotto Bydgoscz Achter (POL)
5. Dukla Prague (CZE)
6. RV Pirna (GER)
7. Münster-Achter (GER)
8. Leander Club (GBR)
9. Moscow University (RUS)
10. Gyor RC (HUN)

WOMEN

1. Crefelder RC (GER)
2. Havelqueen-Achter Berlin (GER)
3. RV Rauxel (GER)
4. Hanauer RC (GER)
5. RaW Berlin (GER)
6. LZR Heidelberg (GER)
7. Nereus Amsterdam (NED)
8. Slavia Prague (CZE)
9. London University (GBR)
10. Nottingham RC (GBR)

results.rowingchampionsleague.com

"Rowing is war and peace. Immersion is peace, release is peace; from immersion to the finish is war." Former Italy coach Beppe de Capua talks technique.

WAR & PEACE IN A SCULLING BOAT

PROFILE

WORDS
REBECCA CAROE

PHOTOGRAPHY
MITCH GUNN & CANOTTAGIO.ORG

I first met Beppe de Capua *(pictured)* at the British rowing conference in 2001; he was the keynote speaker and had come to tell the British about Italian rowing technique and their international success, particularly in sculling. I was struck by his conviction that the technique he coached was the best, and his decision to use photographs of the British W2x (Flood and Houghton) as illustrations of poor technique took courage in a room filled with their coaches!

Selected in 2009 to lead the Italian team into the London Olympics, De Capua today cuts a fine figure in person – a participant and long-time leader of the coaching team, but also one of the "old guard' whose time may be running out.

Italian rowing since 1980s

One of the first nations to get sport funding from the "totocalcio" football pools, Italy used the money in 1980 to bring Thor Nilsen, the FISA coach and administrator, to Piediluco. He built a state-of-the-art rowing training venue and kick-started the renaissance of Italian international success. Nilsen's key teaching for them was that having a standard coaching technique and providing strong central organization would be keys to their future success.

It worked – but not immediately. →


ITALIA
asics
TEAM

Beppe De Capua was the head coach of the senior team during the period from 1980 to 1992 throughout Nilsen's Piediluco project and from 1988 they won medals in the men's quadruple scull at the World Championships for 13 out of 15 years, including six golds.

On the RowingChat podcast, I asked him about the technique he introduced to the squad. There had been two different styles taught up to this time in Italy – that introduced by Thor Nilsen, and the one coached by Dr Giuseppe La Mura, his predecessor who'd trained the Abbagnale brothers to double Olympic gold in the coxed pair.

Beppe's choice of technique was an adaptation from both Nilsen and La Mura. He coaches a catch with the active participation of the back but with the legs dominant, and then the back and legs driving concurrently. The stroke finishes with the back immobile and the arms drawing into the body. For readers interested in the different Italian styles, read Peter Mallory's The Sport of Rowing. The Italian chapter can be found at http://www.anacc.org/new/news/italy.pdf

Beppe explains that in order to teach rowing there are some base fundamentals which are needed in order to ingrain the right pattern of movement: "First, learn how not to brake the boat – it's easy for beginners, not so easy for people with bad technique who've rowed for years. Then start to learn to add power to the boat and pressure to the blade work. You need to row many kilometres at low intensity to get the feeling."

Not stopping or braking the boat is a strong theme. He holds that if you add power immediately at the catch, you slow down the boat. And his advice for athletes is, "Don't think about the water at the catch". You want to load your boat onto the blade, and when you feel this then start to push the legs.

I ask him about how this technique changes for different boat classes, and he explains that the length of the stroke is the same in all boats and the principle of the technique doesn't change – how to use your legs, back and arms. The rigging and the distribution of power during the stroke is the only thing that changes. In an 8 you start the stroke with high power and in the single with less power because the profile of the stroke is different. The power phase takes appreciably longer in a 1x than in a 2x or 4x or 8.

The mark of a top coach is their ability not just to describe the technique but also to teach it to others – coaches and athletes. Beppe says that he helps people to understand the movement he's seeking by getting them to →

"FIRST, LEARN HOW NOT TO BRAKE THE BOAT – IT'S EASY FOR BEGINNERS, NOT SO EASY FOR **PEOPLE WITH BAD TECHNIQUE** WHO'VE ROWED FOR YEARS."

— Beppe de Capua

"DRILLS ARE LIKE MEDICINE – IT HELPS IF IT'S THE RIGHT MEDICINE YOU NEED. IF IT'S THE WRONG MEDICINE IT WON'T HELP."

imagine that the blade is your hand, like a prosthesis. At the catch use this long prosthetic hand to catch the boat, not catch the water.

Feel the contact between your hands (blades) and the boat. When you feel the contact is done then start the power – he calls this the "war". Until that moment let the boat and the blade have peace. "Rowing is war and peace," he says. "Immersion is peace, release is peace; from immersion to the finish is war."

Using drills to teach technique

Among the drills De Capua recommends is the two stops during the recovery – from the finish position just move the arms – one stop. Then move only the back – the second stop. Then complete the recovery. It gives good balance and allows the athlete to feel the co-operation between the body, sculls/oars and the boat.

He adds, "Drills are like medicine – it helps if it's the right medicine you need. If it's the wrong medicine it won't help. Don't do too many drills because too much medicine is like poison. Drills don't work miracles. They help if you do them properly."

If he had to choose one drill for sculling, he likes working on the cross-over of the handles during the drive and recovery. Take note of the moment they cross, right hand lower than left – when the oars are perpendicular. At this point, the rower checks if the two ends of the sculls are exactly perpendicular. They pause on the recovery with the blades out of the water. At cross-over he prefers the rower's hands to be exactly perpendicular, not one in front of the other. Otherwise you create an effect like the coxless pair where the boat "fish tails".

He notes that having the oars exactly one on top of the other can create balance problems because one blade is a little deeper than the other. But he rationalizes this choice of technique because between these two negatives he has tested that there is less friction with deeper blades than with different arcs of the sculls.

Get the rowing illness

De Capua is strongly motivated to get more young people into rowing. He explains that it's very important to first communicate the fun and enjoyment from rowing when they join up. As a coach, you need to communicate to your athletes that you love rowing. Then, as he explains, these youngsters get an "illness" – but it's a very nice illness because it is the life-long love of rowing!

Later, when passion is established, you start teaching them about the stress that rowing brings – the competition, the desire to succeed and the pressures of getting to the very top. You must live with stress and understand that it's our friend; you must respect stress. Don't be a victim.

The politics of rowing

It seems De Capua has had to take his own advice on stress in the past, having been at the centre of a public row between the Olympic athletes and the Italian Federation president, Enrico Gandola, just before the 2012 Games. 14 athletes jointly signed a letter demanding that he be replaced.

Rigging makes fast boats

De Capua's other main contribution to fast boats is rigging. He believes in rigging individually for each athlete in the boat. It's clear from talking to him that this is a very important part of his coaching method.

"The right rigging is easy," he says, "but it's easy to make stupid mistakes in the pitch of the blade, height of the swivel or the foot stretcher position."

He chooses to change the rig for different boat classes and different types of rower. Depending on each person's morphology, muscular strength and flexibility, he will adapt the rigging to suit their situation.

The first rigging job for any new crew is to set the foot stretchers to match at the finish. First put rowers in the boat. Move the central part of the seat at backstops to measure 58 cm behind the line of the work (face of the gate) and fix the foot stretcher there – this is the starting point for every boat from the 1x to the 8+ – and then adjust if needed. The goal is to have all the crew with the same arc lengths in the water.

Listen to RowingChat to get the full rigging number details.

It seems his strongly controlling system of training was challenging, particularly for the more mature athletes who had lots of international experience.

The bombshell was leaked anonymously to a major Italian newspaper, *La Repubblica*, by a rower who complained that their training environment was like being locked in a barracks for over 200 days without any contact with their families and existing under prison-like "paramilitary" rules. The complainant got punished for turning up one minute late and was put under curfew. And so the athletes felt that the climate of stress and fear was not ideal for Olympic preparation, and that prompted them to write the letter.

The argument was later vocalized by Rossano Galatrossa, who was dropped from the men's 4x at a pre-Olympic training camp and made team spare man.

The exclusion of Galtarossa, a veteran four-time Olympian, was a big surprise to the public – and the results from the 4x, which had won silver in Beijing four years earlier and only came 11th in London, seem to bear out a challenging selection decision. Galtarossa came out fighting and spoke to the press challenging the decision, saying that his ergometer data was showing him with better scores than from the Sydney Olympiad.

De Capua counters that Galtarossa's erg was only fifth in the sculling group and his sculling technique was 'stiff' and sweep skills 'low'. "I tried greatly to help him to improve," he says, "but it was not enough [to keep his seat]".

The outcome of the Olympic regatta was progress over Beijing (three crews placing second, and two 11th) for the Italians, with four heavyweight men's crews qualified and achieving second, fourth, eighth and 11th; improvement in quantity and quality.

The howls of complaint were vocal and public, calling for the resignation of the Federation President, Gandola, but ended with De Capua being the scapegoat and leaving the Italian Federation job to become an international coaching consultant.

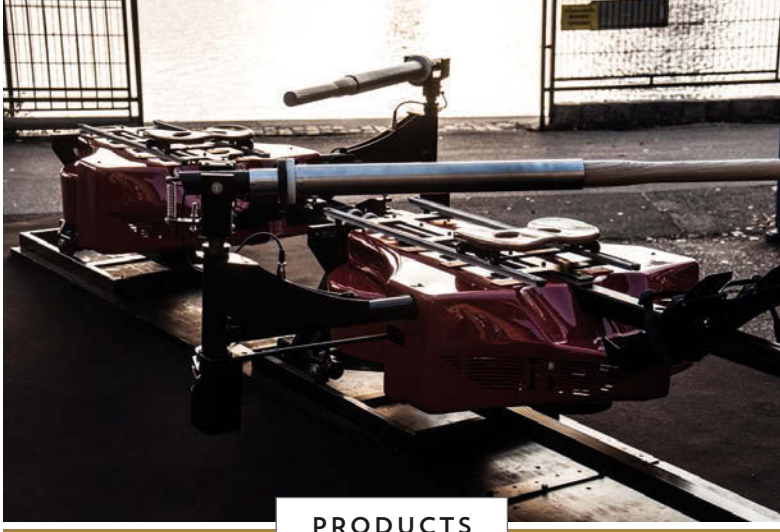
Bringing Turkey and Cuba into the medals

Beppe was head coach of the Galatasary Rowing Team in Istanbul, Turkey, where his work drove domestic success and also Turkey's first ever senior World medal – a bronze, won by the lightweight men's eight in 2014. Four rowers and the cox were from the club.

He has also been instrumental in coaching Angel Fournier Rodriguez of Cuba up from the back of the heavyweight men's single sculls A Final into the medals, from 7th in 2012 up to bronze and silver medals at the World Championships in 2014 and 2013 respectively.

Whether you see the London debacle as a blip or not is irrelevant; De Capua is a visionary coaching talent now available internationally to anyone with the desire to go fast. Italy's loss may be many others' gain. ROW360

Rebecca Caroe is passionate about rowing technique making faster, fun boats. She blogs at rowperfect.co.uk/news.



PRODUCTS

Imitation Game

BIOROWER attempts to mimic the characteristics of water

BIOROWER's vision is that athletes are selected for team boats, based on the way they influence the boat, not just by pure power. BIOROWER rowing machines offer similar set-up and adjustability options to those of a racing shell. BIOROWER aims to allow athletes to improve their physical condition in a way that realistically mirrors the rowing action, adapting what the makers of BIOROWER call their "rowing handwriting" – so rowers learn to influence a boat in the same way indoors in winter as they would on the water in summer.

Add-ons such as the swing frame and the availability of full oars make their models almost boats without water, demanding good technical quality in the rowing action. The swing frame allows for the whole machine to roll as on water (encouraging the stability needed to avoid taking a swim) and the rower can even use competition oars on the machine.

For a deeper-dive approach the E-Package option enables computer-based analytics. Sensors measure and transfer real-time data for stroke lengths and force curves to a laptop in front of the rowing athlete, letting him or her see instant feedback on their training.

The rowing machines are built to precisely match racing shell cockpit set-up. Span, inboard length and slide width are exactly as in a boat, even down to details such as the adjustable height difference from seat to heel – indeed, almost anything can be adjusted in the effort to reflect real rowing.

Features

Adjustable seat rails
Like in the boat, the seat rails are adjustable to match original boat settings.

Adjustable resistance and dynamic load adaption
This means that the system adapts mechanically to the amount of load you apply on the oar handle. The harder the pull, the more resistance on the blade.

Rotating inboards
The inboards rotate and lock at 90° with a solid sensation and sound, providing typical multi-dimensional feedback. This means that athletes may feather and square the blades just like they do it in the boat.

Adjustable foot stretchers
A solid mechanism allows foot stretchers set-up according to individual body proportions.

Adjustable height difference from seat to heels
Simply adjust the height difference from heels to the seat as in the boat.

Sliding frame
As part of the mechanic feedback system, the sliding frame contributes significantly to the realistic rowing feeling.

The Chattercox Guide to Head Races

WORDS ZOE DE TOLEDO
Cox of GB W8+

WORDS KATIE APFELBAUM
Coxed Isis in Boat Race

During the head race season coxes can get distracted by the multitude of tasks they are expected to perform. Not only are we expected to steer the most efficient course possible, we also need to overtake safely, and come up with enough of an interesting race plan to keep the rowers focused and motivated. Here we shall provide you with our super-secret hints and tips to getting the most out of your crew on race day.

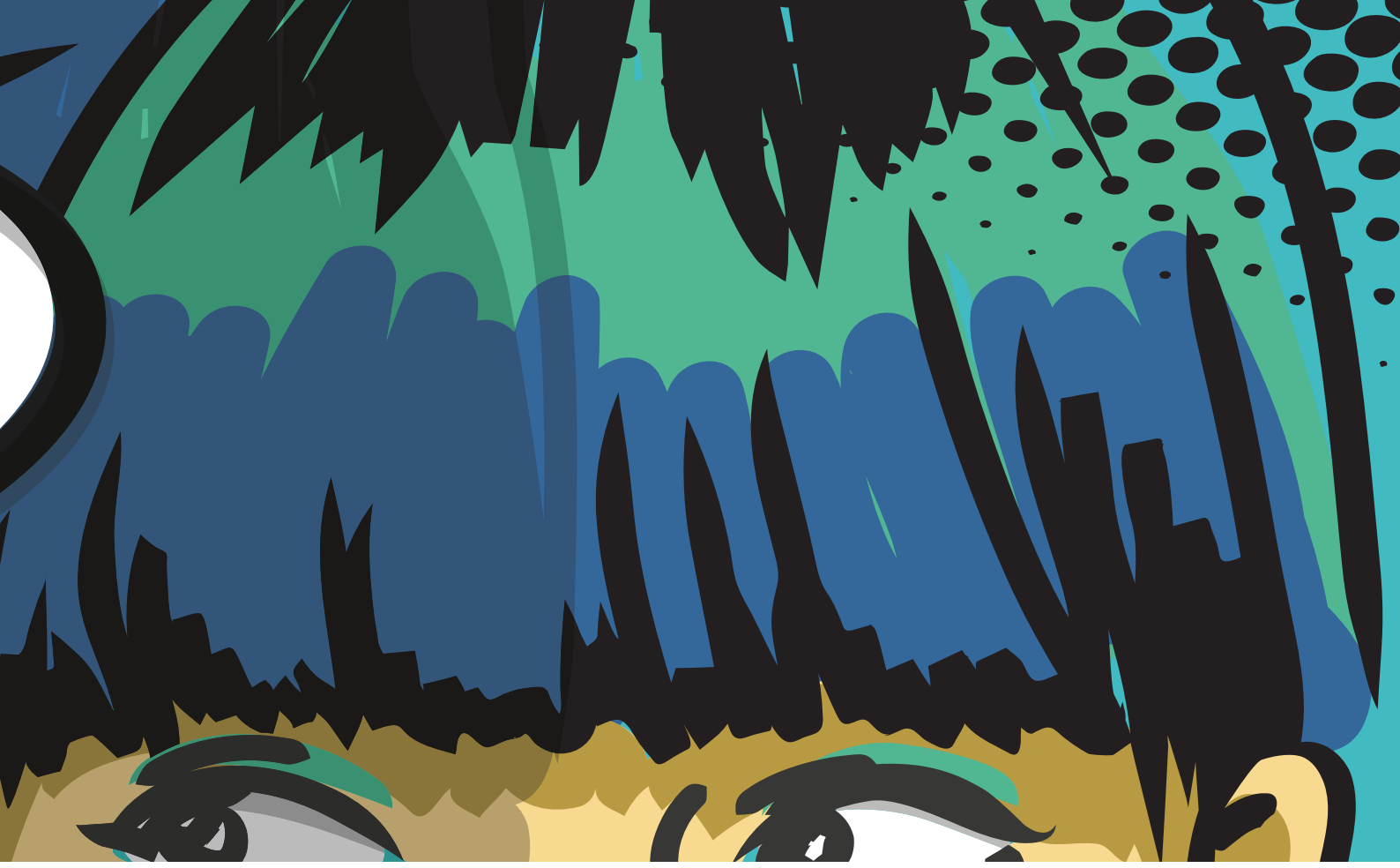
Preparation

Katie Apfelbaum: Before I go out on the water I always go over a map of the race course with my crew, so I can point out where conditions may change, where it may be difficult or impossible to overtake – for example, if there is a pinch point on the race course. This way they will be aware of the strategy you are aiming for. This is also the time to go over any particular race plan or moves, so you can focus on having the fastest time trial possible. Also make sure you know the boundaries of the race course. For example, at the Head of the Charles there are some buoy lines that can be crossed with the blades, whilst others cannot.

Zoe de Toledo: For me I find it particularly helpful to discuss with my coach, crew or a knowledgeable local oarsperson about how the conditions might affect the race on that given day. For example, the race line that you might usually take could be compromised in certain conditions, such as an unusually fast stream or severe winds. If you don't know the race course well, then don't be afraid to find someone to talk to who might be able to give you some advice.

Getting to the start in one piece

KA: Anticipate plenty of traffic, so be flexible with your warm-up. If you see



clean water or an opening then put in your hard strokes there, rather than putting in your drills that will eat up this space.

ZDT: When I plan my head race warm-up I make sure I know exactly which bursts or drills are the priority in case I run out of space or the warm-up area is more congested than I anticipated. Katie and I both agree that you need to make sure you row at least one hard 20-stroke to one-minute burst; if the rest of the warm-up isn't perfect then it's not the end of the world. I also always brief my bow person to keep their eyes peeled: they don't have to look around every stroke, but it can be incredibly beneficial to have another look-out.

KA: Stay calm and polite in the start area; always know where you need to be. Fake control if you have to – getting flustered and stressed at this point in your warm-up will only unsettle your crew.

Structuring your race plan

ZDT: I like to start a race aggressively, but quickly transition to more technical and rhythmical calls for the earlier part of the race. To keep the rowers occupied through the middle I will focus on a combination of technical and more motivational calls, and then build a crescendo towards the finish.

KA: I'd add that it is really important to use geographical points along the race course, whether that is bridges, turns or mile markers. You can use these as check-in points: are we rowing the way that we said we would be at this point? Are we where we want to be in relation to the boats around us? This is also a good time to decide whether you need to adjust your tactics at these specific points.

ZDT: Head racing is a good time to try out new calls and to practice varying your tone. Without this variety the rowers can easily get distracted.

KA: However, make sure you have clear technical points set out in advance, and stick to maybe just three or four main technical focuses during the race. Don't be afraid to keep coming back to these key points.

Steering

ZDT: The most important thing in a head race is remembering that you won't always get a clean shot down the course. It is vital that you keep looking ahead to anticipate any problems that might be about to occur.

KA: Agreed. In particular when you are overtaking it is important to know how fast you are going, and how long it is going to take you to get past another crew. Keep thinking ahead; what might seem like the most straightforward route at the time might not be the best plan in the long run.

ZDT: I think Katie and I, in our stubbornness, would both be reluctant to move over for a faster crew until the last possible moment. However, we would both agree that nothing is worth jeopardizing the safety of your boat and others.

KA: In summary, plan ahead, prepare well, and ensure you give yourself the best possible chance to have the fastest run of it. ROW360

Words **RACHEL QUARRELL** *Photography* **DREW SMITH**

British Rowing Championships

While the rest of the world was gallivanting about at the 50th anniversary Head of the Charles, Britain's rowers were under orders at Holme Pierrepont, that windswept country park lake just outside the centre of Nottingham. This time it was the weather which won, cancelling Sunday's semis and finals after the crews had spent a tough Saturday struggling into the wind for medals.

Saturday's racing began under lowering clouds, and the time trials, which last year saw some crews taking it easy, turned out to be a harbinger of the final results. The doubles were won by Leander's second men's crew (John Collins and Jonny Walton beating world quads silver medallists, Charles Cousins and Pete Lambert), and Imperial's women, while the fours went to Molesey's men and the "LIMA" composite for the women. All four crews remained unbeaten, winning their semi-finals and finals.

In the fours, the power of Molesey's near-world champion quartet (with James Foad in place of FISA champion, Alex Gregory), was too strong for Oxford, rowing as Isis (featuring champion eights stroke Constantine Louloudis), and Leander's B crew. For the women, world champions Heather Stanning and Helen Glover were joined by eights rowers Zoe Lee and Jess Eddie to create the LIMA crew which, like Molesey, won by a substantial margin in the strong head-wind.

Because this is a club-based event, Imperial College were able to field world sculling champion Emma Twigg, over in the UK pursuing her international sports masters, who with Mel Wilson dominated the field. The men's doubles was the only close final, a thrilling contest in which Collins and Walton rowed through Lambert and Cousins and then clung on to win by only 0.42 seconds in rising winds.

Warnings that Sunday morning would be affected by stormy weather turned out to be true, high winds overnight rattling the shutters while rowers tried to sleep. The time trials were successfully completed but with whitecaps visible on the water and rolling waves washing across the start pontoons, side-by-side racing was postponed several times and eventually, in the early afternoon, cancelled.

Medals were awarded based on time trials, LIMA adding the quads title to their collection, and Leander taking the men's and women's eights golds over Oxford Brookes and Imperial

respectively. The men's quads was won by a Reading composite in which senior world medallist Sam Townsend led juniors Rufus Biggs and Chris Lawrie, along with lightweight Zak Lee-Green, to outdo both Leander's crews. **ROW360**

Paralympic rower **Moran Samuel** is on a mission to change attitudes towards her sport

WORDS JASPER JOLLY
PHOTOGRAPHY DETLEV SEYB

"No one will deny that I

Moran Samuel has a message to all her fellow Paralympic athletes: "Stop complaining, just be there and expose yourself, and go out. This is what I do here in Israel – this is what I have tried to do. Be present. No-one will be able to deny that I exist."

The Israeli rower only took up the sport four years ago, but since then her rise in the AS (arms and shoulders) single sculls has been quick, leading to fifth position in Chungju in 2013, before winning the silver medal in Amsterdam at the latest world championships. Now she is determined to do everything possible to challenge for gold in her second Paralympics in Rio. At the same time, Samuel is strident in her efforts to change attitudes towards para-rowing and disability more generally.

Many in her home country will already be familiar with her headline-grabbing efforts. Samuel became what the *Jerusalem Post* described as "a media darling" in her home country

when she won gold in a regatta in Italy. The organizers had not prepared for an Israeli winner, and so had no recording of the national anthem (playing something completely different instead). Unperturbed, Samuel grabbed the microphone and sang the anthem, the Hatikvah, herself. The result was a flurry of press interest in Samuel's story.

However, Samuel is not content with relying on viral videos to raise the profile of para-rowing and Paralympic sport more generally. "Media coverage should be the same," she says. At this stage this seems optimistic, but Samuel remains hopeful. The media coverage at London 2012, for instance, was mostly excellent for the Paralympic Games. Samuel herself had a "very good experience" overall, both with facilities and, importantly, widespread fan engagement.

London was perhaps the exception rather than the norm, but Samuel is determined to do what she can to change that. The same morning that she won the silver at Amsterdam, the number one Israeli judoka, Yarden Gerbi, won a silver at the World Judo Championships and so became the lead story. Samuel was, for the most part, ignored by the media. A week later Samuel got in contact with the papers, who were mostly apologetic. Her response was, "Never mind, it's ok, not a problem. Put me in the newspaper this week." And they did.

A natural ability

Samuel's story is undeniably a good one. In some ways it is unsurprising that she is among the best para-rowers in the world: before suffering a rare and completely unforeseen spinal stroke at age 24 she was a member of the →

be able to exist"

Israeli basketball team, also playing professional club basketball in Karmiel in the north of the country. The stroke obviously dashed her standard basketball career, but a few years later she started the wheelchair version of the game. In 2010 she was persuaded to try para-rowing, and she quickly discovered that her abilities meant that she had a natural aptitude for it (being a tall basketball player with a long reach undoubtedly helps). She also found a feeling in rowing that had been lacking.

Before her disability she had enjoyed running as part of her training, prizing the moment when "everything else just disappears". Rowing allowed her to regain that feeling: "After I was able control my technique in rowing and it became more automatic, then suddenly I started feeling the same feeling again," she says. "It was mind-blowing: 'Whoa, amazing, I can run again'."

Ability, not disability

It is a moving story, and telling it has become part of her job. In between training Samuel is also heavily involved in outreach programmes in Israel, particularly with children, but also with universities, companies – wherever she can spread the word. She speaks at schools around Tel Aviv and further afield, even going as far as Boston in the US at the 2014 Head of the Charles Regatta.

"For me it's a very good way to educate and inspire – it's a big deal," says Samuel. Sport plays a vital role in this effort to change attitudes because it undermines the distinction between so-called normality and disability. Samuel says that, "While you're doing any kind of sport – rowing or any kind of sport – this is your way to take out the 'dis' from disability." Samuel urges her outreach audiences – disabled or not – to get involved with sport. "When a physical disability becomes an ability, it's much easier to accept it," she says.

> After I was able control my technique, suddenly I started feeling the same feeling again. *It was mind-blowing.*

The reverse side of this acceptance of disability is the sometimes patronizing attitude towards Paralympic sport. When talking to Samuel it is clear just how misplaced this kind of attitude is. "They think, 'Oh, it's so nice that people in wheelchairs can row,'" she says of people with condescending attitudes, "and it's true that for some people this is just a way of having fun, but when you talk about Paralympians, people like me that want to make it to a medal in the Paralympics, it's completely professional."

Samuel is a full-time athlete, training six days a week. A normal morning begins with on-water work at the Daniel Rowing Centre in Tel Aviv, followed by a lunch break into which she fits her outreach work. Training after lunch consists of gym sessions three or four times a week, or else erg sessions followed by her beloved basketball in the evening. On Thursday she also manages to find time to work as a physio for a few hours. As competition approaches in the summer months, non-rowing-related activities – social life included, she admits – drop away to allow full focus "from sunrise to sunset".

Onwards to Rio

This training regime has now swung into action for preparing for Rio in 2016. This might seem premature – there is the small matter of another season culminating in a world championship in France's Aiguebelette before the year of the Games even begins – but Samuel has already marked it out as her ultimate aim. She will face stiff competition, and Norway's Birgit Skarstein, victor in Amsterdam *(pictured right with Samuel after the race)*, will almost certainly be her main rival once more. It will be a tough ask to make up the 11-second difference between them in the worlds final, but it is one that Samuel seems to relish.

"For me the World Championships was kind of about making a stand about what I want to do in the Paralympics," she says. "It was more than just winning the silver: I want to stay in the top three and fight for the gold medal in Rio. No athlete can promise you a medal. You can't say I'm 100% sure that I'll win a medal, but I can say I'm 100% sure that I will do whatever I can to be able to do it at the right time, September 2016, Copacabana, Rio."

The average age of Paralympic rowers tends to be greater than Olympic athletes. However, while Samuel will be relatively young in para-rowing terms after the Rio closing ceremony (when she will be 34), and after only her second Paralympic Games, she sees it as her last before moving on to the next goal of having a family – it is perhaps a measure of her commitment to rowing that she calls having a family "impossible while training for Rio".

Samuel is not one to shy away from the big picture, and one of the most striking things about her is the ease with which she discusses her life, albeit in language that sometimes runs the risk of corniness. But when talking to Samuel her enthusiasm is infectious, and it is impossible to disregard her genuine belief in the importance of what she is doing, and her determination to leave a legacy from her relatively short career. "It's ok if I win this medal or that medal," she says, "but what will stay is that I stood up as a person, a human being. This is more important to me than achieving a gold medal in Rio. What will be left behind me after I finish my career and turn to do other things?" ROW360

Photography by Detlev Seyb. See meinruderbild.de for more photos from events around the world.

RIGHT Doggetts 2012. Gary Enniss, winner 1982, watches eventual winner Nathaniel Brice approaching the former Battersea Power Station.

WORDS TIM KOCH // **PHOTOGRAPHY** HEARTTHEBOATSING.COM

The Faded Jewels in the Crown

The "Triple Crown" used to represent the best of British sculling, but now the races languish in obscurity

It is safe to assume that readers of *Row360* are pretty well informed about the sport of rowing and sculling, if not before reading the magazine, then at least after. Thus, British subscribers in particular may be surprised to know that a sculling race that started in 1830, and that is impressively titled 'The Wingfield Sculls, The British Amateur Sculling Championship and Championship of the Thames', took place on 6 November without most of them noticing. It is not alone in Britain as a long-established sculling race that once had a big following and carried great prestige but is now a somewhat obscure event. In this list I would include the strangely named Doggett's Coat and Badge (1715) and two other events that once joined with the Wingfield's to make up the 'Triple Crown' of British amateur sculling – The Metropolitan Regatta's London Cup (1866) and Henley's Diamond Sculls (1844).

Despite its claim that, at 300 years, the Doggett's is the oldest continuously held sporting event in the country, the event almost deserves its obscurity. This annual sculling race from London Bridge to Chelsea is only open to those who are under 26 and who have completed the five-year apprenticeship needed to allow them to carry goods and people on the River Thames. From this already small eligible group, only a handful are willing and able to scull 7,400 metres on a busy and typically rough tidal river. For them the attraction is twofold. First, Doggett's carries great prestige within the small and tightly knit Thames Watermen's community and, secondly, the prize is magnificent. The winner receives a tailor-made costume in bright scarlet based on the dress of an eighteenth century →

Waterman – that is, a frock coat, knee britches, white stockings and a solid silver arm badge the size of a side plate. The decline in the outside world's interest in the Doggett's probably began when racing by professional scullers (many of them Coat and Badge winners) for big prize money, a sport once equal in popularity with football and cricket, did not properly revive after the 1914-18 War.

Another sculling event with a distinctive (though much more modest) prize is the aforementioned 184-year-old Wingfield Sculls. The winners of this race over the four-and-a-quarter-mile 'Championship Course' from Putney to Mortlake have pinned on them a military-type enamel medal of crossed oars on a victor's wreath, with its green ribbon sporting a bar denoting every year that the recipient has won. Though recent winners have included such eminent scullers as Mahé Drysdale and Alan Campbell, the Wingfield's is little known in the modern age. One reason is that for a long time British sculling was marginalized in favour of sweep rowing. Clearly this is no longer the case, and it will be interesting to see if the change has a positive effect on the race. However, perhaps the Wingfield's biggest problem is that modern scullers are conditioned to race on a straight, multi-lane, 2000-metre

Far Left A 'Doggett's Man' on ceremonial duty at Fishmongers' Hall, 2014.

Left A dinner for 14 past winners of the Wingfield Sculls, 1930.

Above W.D. Kinnear, who won the Triple Crown in both 1910 and 1911. He also won 'The World's Amateur Championship', the Olympic Single Sculls, in 1912.

Below Kinnear caricatured in 1930.

still-water course. Some prefer to avoid the tidal Thames where they are well out of their 'comfort zone'. There are numerous examples of the race having been won, not by what would normally be the fastest sculler, but by the one that could stay in the 'fastest water' of a river with many bends and shallows. To quote Wingfield's Secretary, Wade Hall-Crags: "Top-class rowers today are used to racing on plastic lakes where so many of the variables have been taken out and it is just a battle of limb and lung size. This is a different challenge."

Henley Royal Regatta's Diamond Sculls could not be called 'obscure', but it is no longer the most prestigious sculling event in Great Britain and possibly the world, as it once was. Historically, the Diamonds owed its position to the fact that few other domestic regattas were so highly regarded and, further afield, the British rowing establishment avoided what little international rowing there was, ostensibly on the grounds that many foreigners were not 'true amateurs'. The eventual creation of a proper 'national squad' did not help matters as 'the best of the best' now look to World and Olympic titles and Henley fits awkwardly (though not always irreconcilably) within the international rowing calendar. Undeniably there are still times when probably the world's best sculler does win the Diamonds, and the 'Henley Magic' still makes the event's 'Pineapple Cup' something that every sculler covets, but many top-class rowers and scullers have ended a very successful career without a Henley win.

Timing is also part of the problem for The London Cup, the senior sculling prize at London Rowing Club's Metropolitan Regatta, another singles race that does not carry the cachet that it once did. Originally it attracted the best because it was run by the all-powerful LRC and because it was based at Putney, once the centre of British rowing. Later, as times changed, the regatta changed with it and in 1980 'The Met' moved to a multi-lane course, ultimately basing itself at the international-standard Dorney Lake. These were good and brave innovations but the London Cup still does not attract the big names that would restore its previous lustre.

What would be British domestic sculling's 'Triple Crown' today? I would suggest that winning the GB Rowing Team time trials for scullers would be one component, as it is the only event where all the squad scullers, including those usually in crew boats, are tested against each other in singles. I would also include first place in the nowadays unfashionable Scullers' Head, as it is a race that proves both endurance and watermanship. Finally, I would retain the Diamonds as part of the Crown. Its 'one on one' racing on a 'living river' is a very different test from the normal. Ultimately, however, single scullers are notoriously individualistic characters, so perhaps it should be left to them to decide what now constitutes the Triple Crown of single sculling? ROW360

ABOVE The new boats in Fulham Reach's new boathouse, underneath the multi-million pound development.

Broadening participation on British rowing's most well-known water

Fulham Reach Boat Club

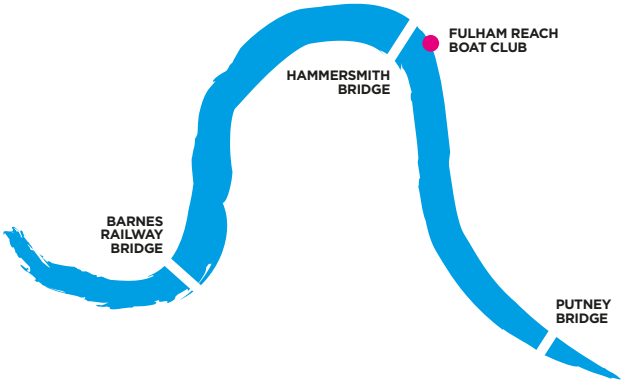
WORDS JASPER JOLLY // **PHOTOGRAPHY** MIKE COUCHMAN

The Boat Race course is probably the most famous length of rowing water in the world. No new clubs have been established on this part of London's River Thames for over 50 years, but Fulham Reach Boat Club is aiming to open a new chapter in the venerable stretch of water, starting with a focus on engaging the local community in rowing.

The club has been squeezed in underneath a huge new housing development facing the river. The motivation of the club's founders is straightforward: London developments have an obligation under planning law – known as Section 106 – to mitigate any negative effects on the surrounding area, and a new boat club open to the community fulfils that role perfectly.

Central to this community benefit is the programme with state schools in the local area. The First Row project, set up by the chairman of the new club, David FitzHerbert, is already working with four state schools to establish a rowing club in each. The local schools can use proper gear and the services of four coaches, providing them with rowing facilities overnight. 16 training Wintechs of all sizes (with detachable pontoons for the beginners) are available as well as two Empachers for competition. Steve O'Connor, in charge of the day-to-day running of the club as CEO, aims eventually to have 40 sessions per week with schools.

The area around the club, just to the east of Hammersmith Bridge, has what O'Connor calls a "diverse" demographic. The development itself caters for the very highest end of the market, with penthouses going for somewhere in the region of £10 million (around US$16 million) – the Ferrari parked nearby doesn't exactly contradict this image of the area – but there are also large council housing estates on that same street.



Above Olympic champion Katherine Grainger at the opening of Fulham Reach with local school pupils and club CEO, Steve O'Connor.

Left The River Thames, London

O'Connor's commendable aim is to encourage that variety – so typical of London – of professionals and local schoolchildren: "If I can get those two groups together in a boat then I've succeeded," he says.

O'Connor himself is no stranger to the intricacies of clubs, as a former London Rowing Club captain. He packed in a job as a marketer down the river in the City in order to take up the Fulham Reach helm. Starting a whole new club will be a very different challenge, but one which he seems to relish compared to the daily grind of office work – he tells of deciding to quit when standing at a photocopier at 2 am.

The community aspect of the club is essentially a legal requirement, allowing the developers to prove their long-term community benefit. To that end the financial future of the club seems secure, with a hefty £3 million endowment to help fund it over its lifetime. With this backing and its laudable outreach efforts, Fulham Reach Boat Club looks set to carve out its own place on this famous water. ROW360

Rowing Back the Years

The World Rowing Masters Regatta in Ballarat, Australia, welcomed competitors from every corner of the globe.

WORDS PETA RULE // **PHOTOGRAPHY** MAYHEM ENTERPRISES

ABOVE The Western Australian boat trailer travelled 3417km from Perth to Ballarat for the World Rowing Masters Regatta.

It was the morning stretching routine that first caught everyone's attention.

In the same way cricket fans might stretch in the stands imitating their favourite fieldsman, rowers around Ballarat's Lake Wendouree at the 2014 FISA World Rowing Masters Regatta took to stretching in perfect unison, inspired by a special cohort of rowing legends.

The stretching athletes were the contingent of Japanese octogenarians who had come to Australia as part of a crew reunion from the 1956 Olympics. Rowing at those Games was held at Wendouree, and the Japanese placed a respectable fourth in the semi-final, behind eventual winners the US and bronze medallists Australia.

Now aged mostly in their 80s and in Australia on the ultimate rowing field trip, each morning the Japanese rowers would go through a series of stretches to limber up joints and muscles – the same stretches, they told onlookers, as they'd done as young men almost 60 years previously.

The West Australians caught on next. They were stationed next to the Japanese contingent on the banks of the lake and joined in the stretching sequence. By the end of the four-day regatta, just about everyone from the Brazilians to the Brits had tried the Japanese stretching and the athletes themselves had become something of local celebrities.

Rowing Australia events general manager Jo Verden said the 1956 Olympics commemorative row-past on day two of the regatta was a highlight, as members from Japan's men's eight rowed beside a composite '56 crew made of up athletes from Australia, Greece, Italy and Germany.

"Just to see them all get together and have such a wonderful time sharing stories, reminiscing on the past and go out on the water was fantastic," she said.

The Olympians were also reunited with a boat from that era. The Donoratico eight was rowed by the Italian crew in '56, and the crew placed fifth in the final. Rower Cosimo Campioto recalled the "Don" was swamped with water and weighed them down during that final race. He told journalists: "What happened that day, here, for seven and a half years when I was back home, I don't want to see any boat. I don't want to hear about the boat. I was so angry."

However, his reunion with the boat, which remains stored on a top shelf at the Horsham City Rowing Club in Victoria state after they purchased it in the '80s, was a happy one. When the team from Horsham brought the Don to Ballarat and rigged it up, the old wooden vessel was very much the tourist attraction.

To see them have such a wonderful time sharing stories, reminiscing on the past and go out on the water was fantastic.

"This was family," Campioto described it, with a tear in his eye.

For the author of this article, the "Don" is family of a slightly different type: it was the first boat I ever rowed as a kid, growing up in the country and going to training at the Horsham club after school during the early '90s. The boat is responsible for mangling at least one of my fingers. It has steel bars across the hull to stabilize the integrity of the vessel – an early version of today's wing riggers. As a teenager, I recall rushing the slide and banging my outside fingers straight into that bar with sheer force, and howling at the very painful result.

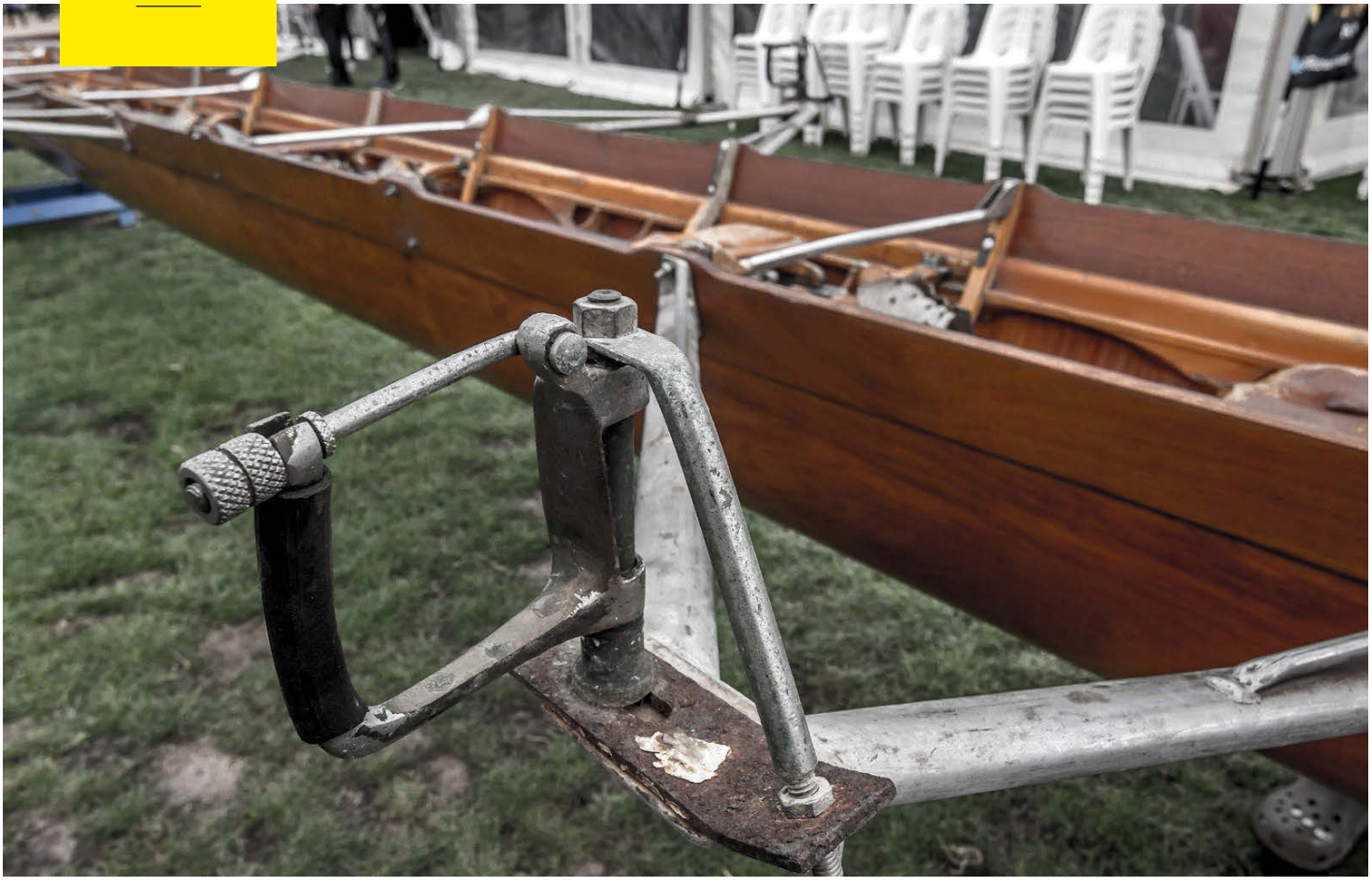
Horsham club secretary Sian Blohm said it was a great joy to dust the cobwebs off the Don and take it to Ballarat as a reminder of bygone rowing days.

"The last time it was rowed was probably in 1993 or 1994, but we love it. We consider our club to be caretakers of an important part of world rowing heritage," she said.

The 2014 World Rowing Masters Regatta was by no means the biggest ever held: with Boston's Head of the Charles event celebrating 50 years of competition, many athletes had made the call to stay north of the equator rather than trek down under.

In addition, Ballarat has a (perhaps unfair) reputation of sub-optimal rowing conditions. In a nation known for sunshine, Ballarat can be blustery, cold and choppy on the water, and the lake itself was dry from 2006 to 2011 due to drought, forcing suspension of rowing in what is usually considered the Australian spiritual home of the sport. →

BELOW GPA Brazil's Alexandre Correra (left) and WA Rowing Club's Dean Neal undertake the time-honoured tradition of uniform-swapping.



ABOVE The Donoratico is now 58 years old and was reunited with some of the athletes that rowed it at the '56 games.

Verden said the timing was an inevitable complication, and it was further sullied by the Australian rowing masters being held in Adelaide just six months previously.

"Australian rowers travel far and wide for regattas, so a lot of clubs would have had to choose between this regatta in Ballarat, and the Australian masters in Adelaide," she said.

"Despite numbers being down, it was consistent with an Australian masters rowing championship so it was a good-sized regatta, worked well in terms of the logistics and it was manageable. It meant we could have good intervals between races and it was good for the racing."

Of the athletes, 70% were Australian and the remaining 30% came from 29 different countries. They competed in a total of 216 races. Of those that did attend, you couldn't argue with the calibre of the athletes.

Along with the 1956 reunion, Australian women's elite rowers from the early 2000s also reunited in an eight which dominated the B-grade event.

Coxswain Katie Foulkes, who was stringy for the Australian women's eight at Athens, pulled the crew together. The line-up also included silver medallist Rachel Taylor, who won the medal with Kate Slatter at Athens. She told Rowing Australia afterwards that the event had been such a blast the women were eyeing the 2015 event at the Hazewinkel regatta course in Belgium.

In terms of time spent getting to the regatta, no one could argue that the prize would go to the boat trailer from Western Australia. It took three days and 3417km for the heavily-laden trailer to traverse the nation from Perth to Ballarat.

WA team co-ordinator and driver, Dean Neal, said the distance comes hand-in-hand with living and training in one of the most remote cities in the world.

"A lot of people I met in Ballarat could not believe we'd driven the whole way across Australia to come, but for us it's just normal. For our elite athletes, they bring their gear across from Perth to Sydney a couple of times every year, so this is nothing new," he said.

"It does add cost, effort and time to the exercise but for me, it just means we make sure we have an absolutely awesome time."

At the end of the regatta, Melbourne Rowing Club was top of the leader board. Canberra Rowing Club topped the interstate table, and Russia's Dynamo Rowing Club led the international contingent in the medal tally.

For spectators, this would hardly be a surprise, as everything Dynamo touched turned to gold.

But the most commonly-heard phrase to end the regatta?

"See you in Belgium." ROW360

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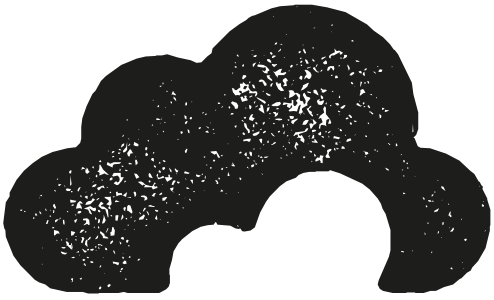

THE WEATHER ROUTER

Unsung Heroes

WORDS JASPER JOLLY
PHOTOGRAPHY CAROLINE BARKHAM

Coverage of ocean rowing tends to focus, for obvious reasons, on the pictures of the grizzled crew stepping onto shore after weeks at sea. But what that coverage tends to omit is the large operation getting that crew to the starting line and supporting them throughout the row, before an oar has been pulled in anger. For many crews over the last few years, Tony Humphreys has been the unsung hero behind the scenes of that operation, guiding rowers all the way from the drawing board, to the boat, and back home at the end.

Humphreys has a strong claim to being the person who knows the most about ocean rowing on the planet, despite never having actually rowed an ocean himself. "You learn a lot from everybody that has rowed," he says when we talk in the aftermath of the return of his latest charges, the Fast Row West Indian Ocean four. "You can have two people on the same boat who have a very different experience. The more people you talk to, the more boats you see that have crossed an ocean, the more you learn."

Getting to the start

It is difficult to appreciate from the outside just how much detail has to be taken into account even before the row. Humphreys guides his charges, many of whom have absolutely no knowledge of ocean rowing, through the steps they need to take from the earliest stages right through to final scrutineering – testing every single aspect of the boat – before departure. Boat selection, equipment, routing, timings, logistics, and shipping are just some of the things that a crew will have to research thoroughly, which can be overwhelming for the uninitiated, but Humphreys has seen and dealt with it all.

Preparation, team work and equipment are vitally important in a successful ocean crossing, but one of the biggest factors in the success of any ocean row is the weather. What route the ocean rowing boat takes is critical to their success. It can not only mean the difference between a fast or slow crossing, but even completing the crossing at all.

When rowing an ocean there is no one route. There is a typical course which will be vaguely followed – one with the highest probability of favourable winds, waves and currents. However, weather does not always follow the script, and can throw unseasonal and unpredictable conditions into the paths of the ocean rower. Enter the weather router.

Most people who row an ocean do not have an in-depth knowledge of reading weather radars – indeed, this depth of information is not available, given limited resources, on the boat. So from back home, in his warm office →

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Below Tony Humphreys (centre) greets the Fast Row West team on their arrival in the Seychelles.

sipping a cup of tea, Humphreys monitors the weather radars in the short and slightly longer term and informs the crew of what is coming their way.

This assists in two ways: firstly the crews are psychologically and physically prepared for what is coming their way, and secondly they can adjust their heading towards more favourable weather (even changing destination, as in Fast Row West's case).

Mother Nature

Typically the weather router will be in contact with the crew once per day throughout the whole crossing at an allocated time (even on Christmas Day), supplying them with a weather update and a latitude and longitude to row towards. From this, the crew can take a heading based on their current location, and ensure as far as is possible that they hit the 'waypoint'.

Even the best-laid plans cannot prevent Mother Nature taking her toll. Most of the ocean rows that don't make it decide within the first few days, within reach of land, but sometimes a full-scale, mid-ocean rescue is needed. One solo rower working with Humphreys was "pitch-poled" (a term unfamiliar to most flat-water rowers) in what he offhandedly calls "a big system" – the waves so huge that the boat was tossed end over end, rather than the more normal (but still terrifying) sideways.

"When it came crashing down it split the bulkhead into the rear cabin," says Humphreys. Water kept on spilling in every time the boat was capsized again, with the unfortunate sculler having to wait 48 hours for rescue in the worst conditions Humphreys has ever come across.

Shying away from the limelight

The ocean rowing community is (unsurprisingly) small, so there is no normal route into it – Humphreys estimates that he is one of three people worldwide able to offer everything that he does. His involvement began not in the world of rowing but rather in sailing (for which he is an Ocean Yachtmaster), assisting ocean rowing and sailing pioneer, Sir Chay Blyth, in his Challenger voyages. Since then he has been safety officer on various organized races, before branching out on his own from 2009.

The one question everybody asks is whether he could ever be tempted himself to attempt an ocean, but Humphreys is content to leave the limelight to others. "I'm just happy to help people achieve," he says. "I think all of these people are amazing. What I really enjoy is working with people who are not regular 9-5 people."

It takes a certain type of person to take this kind of pleasure in the achievements of others, but it seems that this is one of the most important qualities for someone who has an inevitably tight bond (especially with the solo rowers) while the row is going on. "You're very much a team and you're very honest with each other, and it is a close relationship," says Humphreys, but for now at least he is "staying in his role," content to leave the call of the ocean to others. **ROW360**

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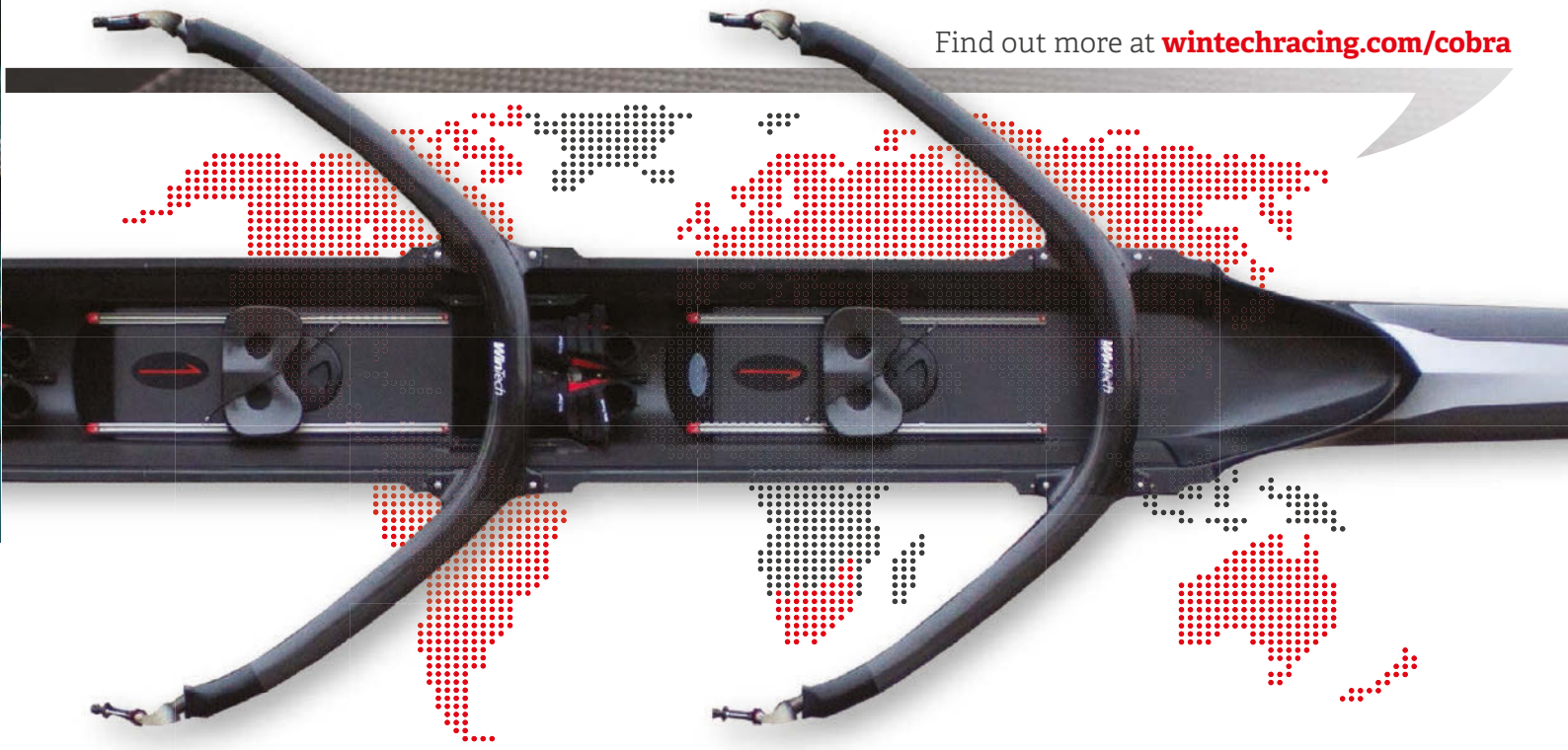

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THE FIGHT FOR

A generation ago college women's rowing was a poor relation of the men's equivalent. Things have changed for the better in recent decades.

WORDS KATIE APFELBAUM

The journey of women's collegiate rowing in the United States has been one of expanding opportunities fueled by commitment and hard work. While it is a marked with myriad small gains and achievements, two distinguishing points accelerated the growth of opportunities and expectations: the passage of the Title IX legislation in 1972 and the inclusion of women's rowing as an NCAA sport, with its first championship held in 1997.

Title IX guarantees that "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." However, an iconic protest by the 1976 Yale women's rowing team gave life to the amendment, catalyzing equality not only in access to sport but also to facilities, equipment, and athlete treatment.

The sport continued to develop rapidly through the 1980s, following closely behind the change on the international stage. A year after the lightweight women proved female athletes could successfully compete over 2000m at the 1984 world championships, the US national championships extended their racing from a 1K to a 2K format. It also set women's rowing on the path towards the second significant change: becoming an NCAA sport with a sponsored national championship in 1997. Previously, the combined challenges of producing competitive boats and the funding for travel left the national championships an intense but ad hoc racing event. Additionally, by separating programmes into three divisions, the NCAA created the opportunity for clubs to compete head to head with their peers.

The depth of collegiate rowing is attributable to the commitment and expectations. Lori Dauphiny, Princeton

A FAIRER DEAL

women's head coach and one of the most successful coaches in collegiate rowing, attributes the depth of collegiate rowing to the turning point of the Title IX legislation that led to joining the NCAA with a sponsored national championship. "The NCAA didn't go immediately to a team championship," she noted. "For many years they recognized the top team and the top first varsity champion. This was great and encouraged big growth. The smaller teams had a chance of qualifying by the result of their varsity eight, or larger programmes could qualify by results of team and top eight. It ensured the fastest eight in the country was there," while promoting team depth. The current format features two eights and a four from each college.

In order to ensure that the best teams compete at the national championship, the NCAA pays for the travel of all teams that qualify, in addition to a daily stipend to cover trip expenses. This funding ensures that the national championships showcase peak performance from the very best athletes.

The effect of these institutional changes is in the numbers: 152 collegiate rowing programmes support over 7,000 female rowers, with anywhere from $50,000 to $250,000 from college athletic departments. The trickle-down effect is seen on the community and high school levels, where middle and high school students have the opportunity to row in approximately 600 programmes. The increased access and quality has increased participation in rowing at all levels, whereby young girls can learn to row in the sixth grade or walk on to a Division I collegiate programme.

Wesley Ng, US National Women's Rowing Coach of the Year, as head coach of the Trinity College women's team, 2014 DII champions, acknowledges the role of better access to information and technology in aiding the transition of female rowers to elite athletes. Athletes and coaches now have virtually limitless videos, podcasts, and conferences. Advancements in equipment design – such as Concept2's skinny oars, modified seat shapes, narrow oar handles, and modified blade designs – enable female rowers to maximize their strength. Ng also cites the increasing commitment to strong moving patterns, supported by the greater knowledge in the unique ways women respond to weight training. Training and equipment are no longer the hand-me-downs or smaller versions of men's rowing programmes; a serious commitment to understanding the training programmes and equipment necessary for female athletes to excel is driving the sensational speed of collegiate crews.

The fact that virtually all members of the US women's senior national developed through collegiate programmes illustrates the long-term impact the commitment to providing opportunity for tenacious preparation and racing can have on the international world of women's rowing. ROW360

Winter

The autumn season is now over, the docks are in and the boats have been washed and put away for the winter. I know that many rowers in warmer climates – the southern states or west coast of the US, for instance – have no idea what I am talking about, but the majority know exactly what I mean: winter training has started. For many of us those four words bring a sad sigh and look of desperation, but when looking to the future spring season, winter training is the most important time of the year.

There are many aspects to training that are responsible for you either achieving or falling short of your goals. Consistency may be the most important one of these factors. We know that physiological adaptations occur when a consistent stimulus is placed on the body that is over and above what its normal stresses are. That and recovery are the two things you need to become more fit. As competition continues to increase and the available time to train decreases, the question now becomes what is the most efficient way to become as fit as possible in the time you have available.

When training time is limited, then the most important factor becomes the quality of the training. Winter training allows you to control the variables that can affect your training:

- Launching, receiving, racking, and cleaning boats;
- Wind, temperature, and lack of sunlight;
- Extended travel to and from the boat house.

When comparing power data of individual training sessions performed by a cyclist – once outdoors (Fig.1 see over page) and again indoors (Fig.2 see over page) – you can quickly see how the variables affected the quality of their training. In his indoor training session, the quality of the time spent training is significantly higher. With more focused and efficient efforts he or she could have spent more time training or would have been able to do the same amount

Training

Why we need it

WORDS JAKE SCHUPPE

of work in a shorter time frame. With higher-quality training you can achieve specific overload while decreasing chronic fatigue. Instead of spending your time and energy compensating for the variables listed above, you can have focused and consistent training, and take advantage of the newly available time to include cross-training in your training regimen.

When taking into consideration all the factors that potentially could keep you from achieving your goals, injury is always high on that list. Depending on the injury, all the time and energy you have placed into training could be for nothing. Nothing can derail a successful spring season as easily as a chronic injury. Cross-training develops and strengthens the musculature of the body that has been neglected due to the specific demands of rowing. Balancing the body does not only involve strengthening muscular weaknesses, but also correcting imbalances that occur from chronically tight musculature. Because of the specific demands rowing places on the body, it is typical to see rowers with weak and tight hamstrings, hyper-mobile shoulder joints, chronic lower back fatigue, and excessive knee pain due to overdeveloped quadriceps. Because of the specific technique required in rowing, cross-training should be designed to help correct these imbalances. The following should be included in any regimen:

- **Activities that promote opposing movements**; as rowers we pull with the upper body and push with the legs. Pushing movements with the upper body such as push-ups will help to correct shoulder instability. Rowers typically have highly overdeveloped quadriceps, leading to weak, tight hamstrings. Pulling motions with the legs will help to strengthen and create balance between the opposing musculature, preventing future chronic injuries.
- **Stand up and move around**; rowers spend a significant amount of time in a seated flexed position. This position can create rotation of the hips to occur, placing more stress on the lower →

back and hamstrings. A simple standing exercise such as running uphill helps to strengthen the musculature of the truck responsible for stability. Agility circuits are also very beneficial for rowers, as they help to strengthen the trunk in lateral planes and activate more core musculature – responsible for stability.

Cross-training can include almost any activity, as long as it is used to strengthen and develop areas of physical weaknesses. Great activates for rowing athletes are:

- Weight training
- Core strengthening
- Yoga
- Pilates
- Agility training
- Cycling
- Cross-country skiing

When implementing cross-training sessions into your winter training regime, it is important to remember that the priority of winter training is to develop fitness for rowing. Cross-training is simply meant to help prevent injury and keep things interesting. A couple of great rules to follow are:

- Keep it simple!
- Don't try anything radically new;
- Bring the intensity down;
- Cross-training should help your overall training, not hinder it.

Keep it simple

Cross-training should not be complicated; the simpler the routine, the more likely it will actually be performed, and at a higher quality. It can be as simple as a 30-minute core routine on your off days:

- 2x25 burpees
o 2 min rest
- 3x20 push-ups
o 2 min rest
- 3x90-second core hold (front, left side, right side,)
o 2 min rest
- 2x25 supine hip extensions

Fig.1 Outdoor training by a cyclist

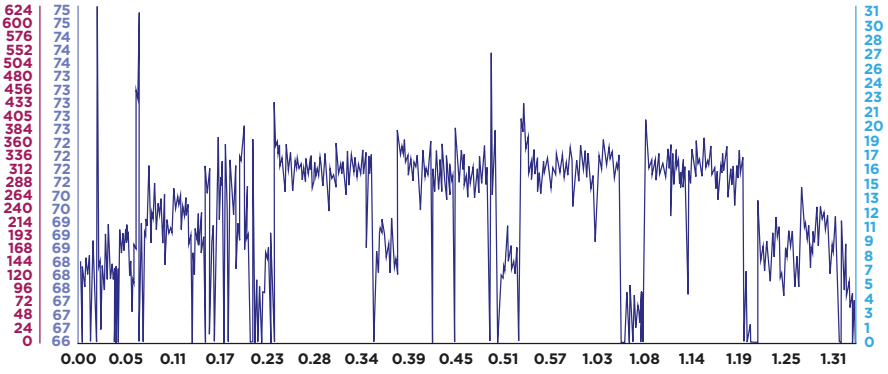
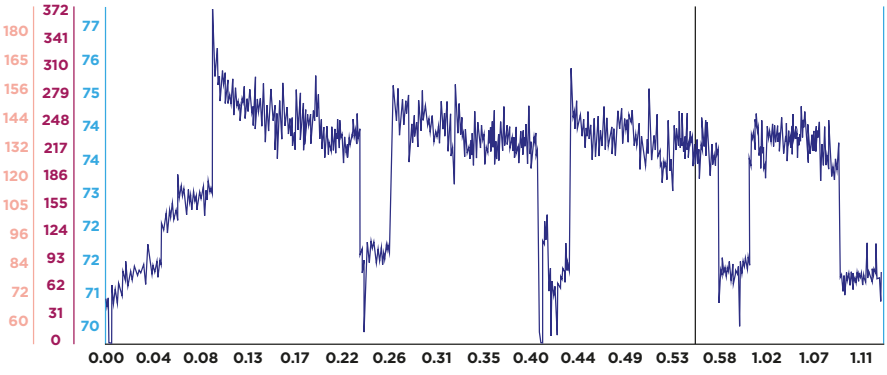


Fig.2 Indoor training by same cyclist



Don't try anything radically new

Now is not the time to take up a brand new activity. Sports such as cross-country skiing, running, and Olympic lifting can be very beneficial to rowers, but activities such as these that require a high level of technique are not a good choice to try for the first time. Any time you pick up a new activity the likelihood of injury increases. It also takes time to familiarize yourself with the proper technique required to see the benefits of that activity. Winter training is all about quality time spent training, and thus you need to prioritize the activities that can start to instantly benefit you.

Bring the intensity down

Cross-training should not be all that intense. Remember, we are strengthening and developing areas that have been neglected due to the nature of training in the boat and on the water. You cannot carry over the same effort you give to your training on the ergometer. If you attempt to push yourself too hard while cross-training you risk an acute injury.

Cross-training should help your overall training, not hinder it

Cross-training during your winter season should make you feel better, help to relive some of your chronic aches and pains, as well as help you feel recovered more quickly. If completed correctly, cross-training should allow you to train harder and longer on the ergometer, while feeling better and stronger. These rules will help you feel better, train harder, and improve your fitness in less time. ROW360

PRODUCTS

Citius Remex boat seat

Building a rowing seat that wasn't a pain in the ass turned out to be tougher than it sounds

For 10 years rowing had caused excessive backside pain for two of Denmark's strongest athletes, Jacob Barsoe (member of the legendary Danish LM4-) and Steffen Bonde (LM1x) because of rowing seats that didn't suit them. So in January this year they decided that enough was enough, and began plans for constructing their own boat seat.

For Barsoe, the pain was so intense that he couldn´t keep focus in the boat. For Bonde the problem was that he could only row for 20 minutes before his legs would fall asleep. So it was either a matter of quitting rowing or finding a solution to the problem.

Dynamic duo

Barsoe started experimenting with material from a sleeping mattress while a truss made an imprint of Bonde's buttocks and furnished the model with EVA foam. Still, there was room for improvement, and when Bonde heard that Barsoe was struggling with problems similar to his, the two decided to team up in the attempt to develop a seat that would solve their problems.

"I have been rowing 10 years with this problem now, and I have for a long time been wondering why there weren't any better seats around, but it is taboo in the world of rowing to say that your butt hurts", says Bonde, and Barsoe agrees.

"Rowing is a very conservative sport, but it is strange to think that rowing, like other sports, has undergone a massive technological development, but the seats are still really poor. Therefore, we decided to make something better", says Barsoe.

Consequently the Danish duo entered into a co-operation with the innovative Danish company MOEF during the summer to create a prototype, while Bonde and Barsoe launched their own company and website, where the first seats will soon be available. At the same time, Barsoe and Bonde invited Danish rowing legend Eskild Ebbesen to join the business venture, tapping into the former Thomas Keller medal-winner´s massive experience from a long career in rowing.

Tests to be done

A number of the world's greatest rowers tested the new rowing seat during the Head of the Charles as the trio aimed to perfect their prototype. However, Barsoe and Bonde recognize that it's difficult proposition to make a boat seat where "one size fits all". "We have already tested it on a lot of athletes, and it is very difficult to make a version that everyone is happy with. Therefore it is also our intention to make at least five to 10 different versions to cover everyone's needs," says Barso. ROW360

WORDS KIRSTEN PETZ

Don't Diet

Lightweight diets can still be tasty

Nutrition is a highly controversial topic in any sport; nutrition in a high-performance sport with weight-class categories, such as lightweight rowing, is a difficult challenge.

Food plays a major role in high-performance sports, even though it is only one landmark on the road to success. Many athletes have their own unique nutrition habits.

All the nutrients in our food affect biochemical processes, our metabolism and our sense of well-being. So why not make use of that fact to support our immune system, increase performance and improve the regeneration process by cooking nutritious (yet tasty) meals?

Believe it or not, healthy food tailored for high-performances sports can be tasty and flavourful! Naturally, nutrition for professional athletes differs from nutrition for people performing sports for health reasons. Nutritional habits in high-performance sports are not the same in off-season, in training sessions and in competitions. In addition, the athletes' food preferences have to be considered, since the success of sports-specific nutrition mainly depends on the athletes sticking to a consistent meal plan.

ABOVE: Professional lightweight rowers, the Sieber brothers, pick up some nutrition tips. Photo: Georg Dujmovits.

First of all some basic facts about nutrition:

You can increase the effect of nutrients on your body, if you take care of your digestive system. A well-functioning digestive system is the starting point for a more efficient absorption of all the healthy food you eat. In addition, you can also support your digestive system by taking in essential nutrients.

Some examples: to keep the intestinal mucous membranes flexible, the amino acid glutamine is needed. Glutamine is contained in eggs, beetroot, salmon and meat. The micronutrient zinc is found especially in fish, meat, walnuts, cashews, peas, lentils or spinach, and it activates hundreds of enzymes. Vitamin C, found in all kinds of fruits, especially berries, leafy greens or peppers, stabilizes the connective tissue. The better your digestive system works, the more effectively your immune system can

fight diseases, and the more efficiently you will perform.

There are also some foods which might have a negative effect on the digestive system, such as grains that contain gluten (e.g., wheat) and dairy products. Other negative factors include stress, an acid-base imbalance, alcohol or antibiotics.

Carbohydrates are the major energizers in sports. It is important to fill their store in your muscles only as much as necessary, depending on the intensity of your training. Most athletes use bread and pasta as their main carbohydrate source. As mentioned before, grains can irritate the digestive system, so try some alternatives, such as rice, millet, corn, sweet potatoes or gluten-free flour, such as coconut flour or almond flour. Try the millet-spinach casserole in the recipe here.

To build up the muscles, rebuild the collagen fibres, and improve regeneration, we need protein. In addition, eating protein-rich food, low in carbohydrates, in the evening helps to control your weight. Some special amino acids in protein are responsible for the production of the hormone melatonin, which makes you sleep better. Recommended foods high in protein are eggs, fish, meat and beans. As an alternative to dairy products, coconut milk, rice milk or almond milk can be used. Try our mushroom omelette recipe for a proper protein-rich dinner after large holiday meals to control your weight again.

Fat, which is found in food as fatty acids, is also necessary to optimize your nutrition. Fatty acids are nothing to be afraid of, if you pick the right ones. Omega 3 fatty acids, contained in, for example, tuna, herring, salmon or canola oil, decrease inflammation. Other recommended oils are olive oil and coconut oil.

Omega 6 fatty acids, on the other hand, might increase inflammations in your body, so try to avoid sunflower oil or corn oil, for example.

Try to eat "colourful" seasonal food. This gives you a lot of phytonutrients (nutrients from plants) and bioflavonoids (sometimes known as vitamin P) to support the immune system and regeneration in general. As much as possible, eat high-quality food that is freshly prepared. Even using deep-frozen vegetables without preservatives or artificial colouring is acceptable.

Always remember, there is such a variety of food that it's a shame if you always use the same! Moreover, nutritional variety is good for our body. The most important thing, especially in lightweight rowing, is that food does not become a big issue, but is fun! So the list of "prohibited foods" should not be too long and the list of preferable products should be much longer, according to the principle:

"Optimize your nutritional habits; do not diet!"

TRY THESE

TASTY MUSHROOM OMELETTE

Ingredients for 2 omelettes

3 shallots
300g mushrooms
50g sliced turkey
4 eggs
salt
pepper
nutmeg
50 ml mineral water
herbs and spices
50g sheep milk cheese

Preparation

1. Peel and dice all shallots. Sauté shallots in just a bit of coconut oil, add ham and mushrooms. Add herbs and spices to taste.
2. Stir eggs, salt and pepper gently. Add mineral water.
3. Melt coconut oil in a pan and add half of the egg mixture.
4. Cook slowly for 8-10 min at low heat until thick, top with some pieces of grated sheep's milk cheese and keep warm.
5. Now prepare the second omelette in the same way. Fold the mushroom filling into each half of the omelette. Enjoy!

MILLET-SPINACH CASSEROLE

Ingredients for 2-4 people

500ml broth
150g millet
250g spinach
½ zucchini
1 carrot
100g sheep's milk cheese (optional)
1 onion
canola oil
2 eggs
herbs and spices

Preparation

1. Bring the millet and broth to a boil. Simmer for 15-20 min.
2. Slice onion, carrots and zucchini into strips and roast them in canola oil. Add spinach, herbs and spices to taste.
3. Then add the millet, stir well and put in a casserole dish.
4. Beat two eggs and pour them over the casserole.
5. Top with grated sheep's milk cheese (optional). Bake in a pre-heated oven for about 20 min.

Enjoy this millet-spinach casserole with a nutritious beetroot salad.

Visualization techniques and performance

IN-DEPTH RACE PROFILES

WORDS CONNIE DRAPER

Rowing is a continuous, cyclic and 'closed skill' movement, and depending on the boat class (1x to 8+), approximately 220-260 rowing strokes over a 2000m race have to be applied under changing external (wind, weather, temperature) and internal conditions (stroke frequencies, boat velocity, mutual influence in a team boat and progressive fatigue). A consistently high technical skill level under different velocity conditions and stroke rates (SR) is a necessary prerequisite of an efficient race plan.

For success in elite rowing, athletes must use their technical skills and entire performance capacity (e.g., physical, condition, co-ordination) to achieve and retain a high average boat velocity throughout the 2000m race. Rowing is a strength endurance sport – technical proficiency will ensure strength, endurance and other physiological capabilities are translated into maximizing boat speed.

Equipment

Monitoring boat and athlete-specific aspects of rowing performance during training and racing is seen as an area of opportunity to assist coaches and athletes in race design. Until recently, on-water measurement systems were viewed by rowers and coaches as too intrusive and heavy to use during racing. Thanks to a fast-growing, accessible and more affordable technology market, several miniaturized devices are available, which assist coaches in objectively assessing performance.

While the stroke/speed coaches have standard monitoring and racing tools, GPS tracking and on-water rowing measuring systems are becoming more attractive to the rowing community. Boats equipped with lightweight, non-obtrusive tracking devices incorporating high-frequency data logging, GPS technology and inertial sensors measure multi-dimensional aspects of the boat movement (stroke rate, boat velocity, 3D boat acceleration and orientation – the pitch, roll, and yaw of the boat) and also individual technique and performance parameters (i.e., handle/gate and foot-stretcher forces, oar angles, handle/seat velocity, etc.).

Utilizing these miniaturized technologies and placing them either on the athlete/equipment (i.e., on the boat, rigger, or oars) is enabling frequent training and racing monitoring. It is important that the sensitivity and technical specifications of the devices are pre-adjusted for the sport to achieve optimal sampling performance regarding the nature of the sportive motion – the rowing motion in this case. The positioning of the units on the athlete/equipment and the calibration are crucial to ensure the measurements are sampled accurately.

Analysis and visualization technique

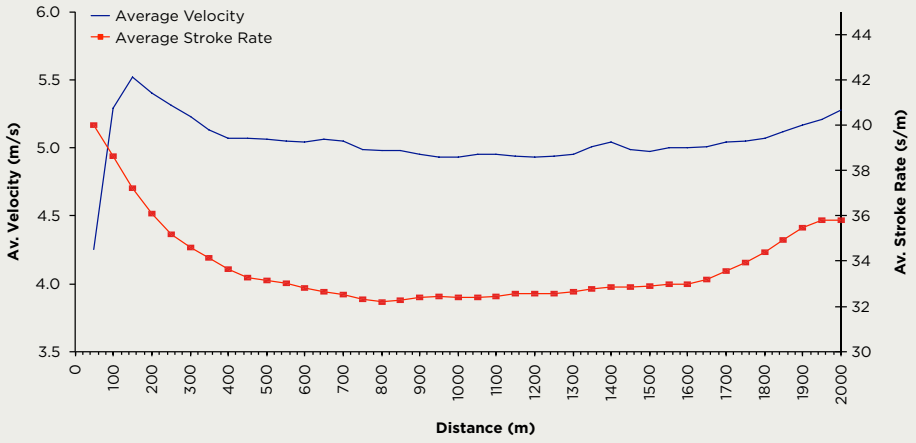
Having access to highly accurate training and racing data provides comprehensive monitoring and analysis tools. Precise data can then be thoroughly analysed and presented for training. The information given has to be meaningful and applicable to athletes or boat performances and towards their training and racing approach.

Profiling individual/boat performances, race information was measured for this example with two different devices: a GPS tracking device, the MinimaxX, made by Catapult Sports, and a rowing instrumentation system, Powerline, made by Peach Innovations, allowing various visualization techniques to analyse the same 2000m race:

- Averaged boat velocity and SR profile (e.g., 50m increments).
- Stroke by stroke (SBS) boat velocity, SR, boat and individual rower power profile.
- SBS force-normalized time curve profiles and SBS colour-coded force-time scatter plots. These plots with a defined colour scheme can be used to profile performance-related thresholds for the boat/athletes' variables to assess stroke consistency patterns throughout the different race phases. →

THE BOAT

Fig.1 **Average boat velocity/SR profile**

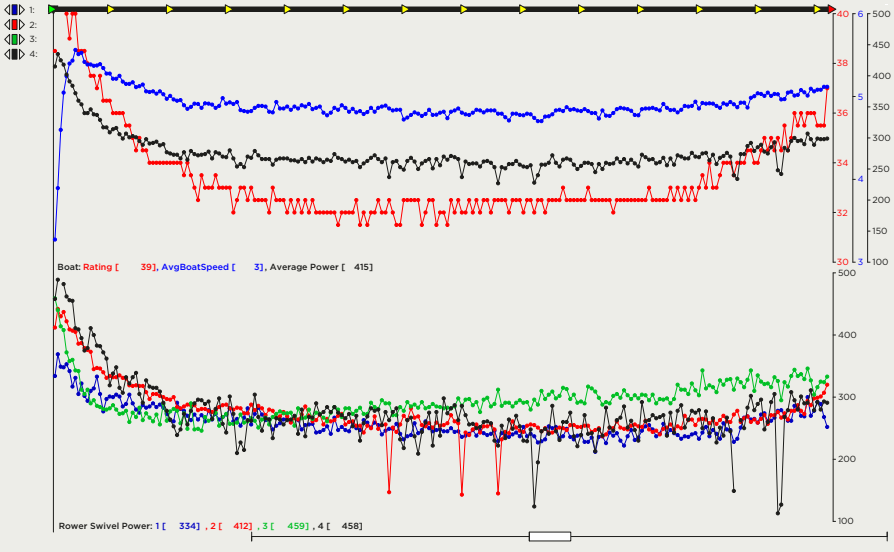


Display of boat-specific information: 'boat velocity' and 'SR' were averaged over 50m increments and displayed against the 2000m distance. The W4x race profile revealed graphically how the boat velocity correlates to a SR change.

The strong relationship between these two key performance indicators is well presented and easily interpreted, which makes it a important coaching tool to assess the crew's racing performance throughout the different racing stages (start, transition, mid-race, finish phase) and could assist in race plan preparation.

THE ROWER

Fig.2 **SBS boat velocity, SR, boat power and four individual SBS power profiles**



Display of boat verses athlete-specific information: the boat-specific variables 'boat velocity', 'SR' and 'average boat power' (top) and the athlete-specific variable 'individual rower power' (bottom) were displayed SBS over the 2000m.

It presents the race information in much more detail and higher accuracy. The SBS analysis adds another level of crucial information to profile races – the assessment of the consistency of the athlete and boat performance.

The individual 'rower power' and the calculated 'boat power' (the average of individual rower power) give further insights into assessing race performance. The individual 2000m SBS handle power displays the stroke consistency and physical capacity of each rower (Fig.2, bottom)

Seat 1 sculler (blue)

- Weaker start; consistency of SBS power varies; power dropped too early towards the last few strokes.

Seat 2 sculler (red)

- Powerful start; consistent SBS power throughout the race, except around the 1000m mark.

Seat 3 sculler (green)

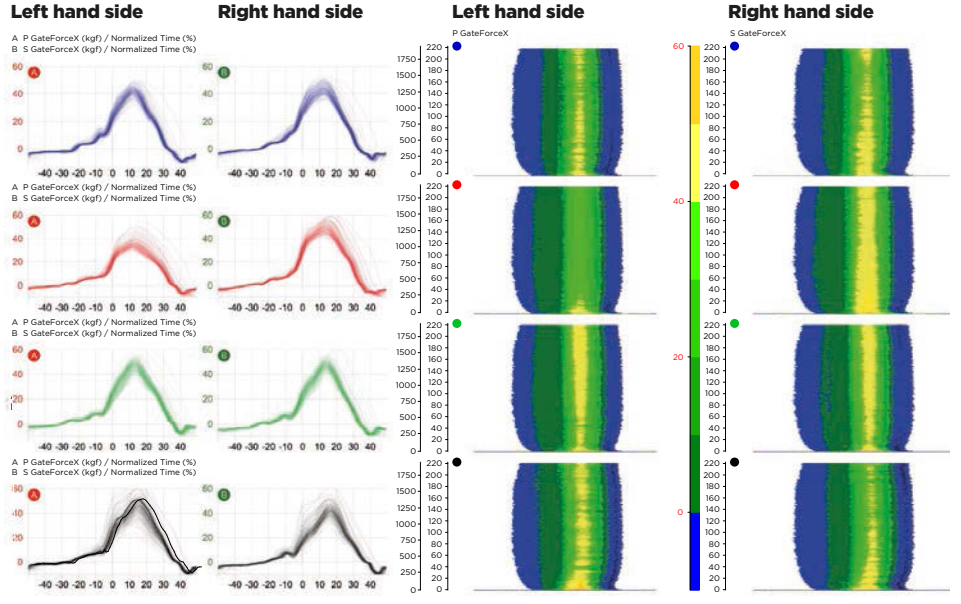
- Weaker start; however, SBS power increases throughout the race; very strong second 1000m; capable of increasing power with increasing SR at a high stroke consistency.

Seat 4 sculler (black)

- Powerful start; however, very inconsistent SBS power throughout the race; reveals technical inefficiency in, e.g., SBS force application/SBS stroke length.

In summary, the rower's handle power varies individually, dependent on the technical skill level and physical capability under racing conditions. The magnitude and consistency of the 'boat power' values are affected by the individual SBS power application of each crew member. As the boat power correlates highly with the boat velocity, results reveal graphically and statistically that sudden loss of individual power/stroke affects directly the crew's boat velocity and so performance. Therefore, when SR increases but not the boat power, boat velocity will most likely not increase either.

Fig.3 **SBS individual force versus normalized time profile (left half)**
SBS individual 'colour-coded force/time scatter plots' (right half)



Negative value to 0kg	Blue-shaded scale; the darker the higher the negative forces
0kg to +40kg	Green-shaded scale
40kg+	Yellow-shaded scale; the lighter the greater the positive forces

Display of SBS force-normalized time curve profiles and the SBS colour-coded force/time scatter plots. The 'SBS force-normalized time curve' profile is a very common feedback tool used to assess the technical skill level of rowers; and in sculling additionally the right and left differences (left graph; port [left] starboard [right]).

Viewing it as SBS data over the 2000m race adds the information of technique and performance variability and stability. However, overlaying 220+ strokes makes it difficult to detect when technical changes occur during racing.

The individual SBS colour-coded force/time scatter plots (right graph; port (left), starboard (right)) also display the force/time curves – however, from the bird's eye view. By defining colour thresholds (see the key) over the force scale, the SBS force application can so be easily viewed and assessed.

- The colour-coded display presents all 220+ SBS force applications for the entire race (one horizontal line indicates one stroke).
- The display progresses from the bottom to the top line; with starting strokes at the bottom, mid-race strokes in the middle, the finish strokes towards the top.
- The green/yellow band indicates the drive phase of the force profile, the blue band the finish slip and recovery phase.
- The wider the SBS yellow band (in the horizontal direction), the longer the athlete is capable of keeping the applied forces at a high magnitude close to his/her peak forces throughout the drive phase.
- The more consistently the SBS yellow/green bands are detectable (in the vertical direction) from the bottom to the top, the more consistently the athlete can retain her/his level of technique and performance (with regards to gate force application).

Viewing the individual force applications of the W4x:

Seat 1 sculler (green dot)

- Starboard forces are stronger throughout the drive than port side; SBS peak forces decreasing visibly after the first 1000m, before increasing shortly on both sides just before the finish.

Seat 2 sculler (red dot)

- Consistently much greater force application on starboard throughout entire race.

Seat 3 sculler (blue dot)

- SBS force applications are lowest at the first 250m and increase consistently through the mid-race phase and towards the finish (the findings explain the lower power values at the start in Fig.2).

Seat 4 sculler (black dot)

- Great force applications on both sides around the first 500m; after that inconsistent and decreasing SBS force applications on both sides; more visible on starboard (the findings explain the inconsistent power values around the second 1000m in the race; Fig.2).

While the common curve profiles assess the quality of the technical skill level of rowing-specific variables, the colour-coded time scatter plots quantify and profile comprehensive SBS changes of characteristic athlete or boat-specific curve patterns (in this example the gate force profile) in the consistency and stability of technique, and performance over a duration of strokes (training/racing).

“THE INFO UTILIZED CAN BECOME CRUCIAL IN ASSISTING COACHES AND ATHLETES PROFILING INDIVIDUAL PERFORMANCE (FOR BOTH TECHNICAL SKILL LEVEL AND PHYSICAL CAPACITY)”

Summary

Different visualization techniques offer a greater variety and understanding for monitoring boat and athlete-specific aspects of rowing technique and performance during training and racing. The information utilized can become crucial in assisting coaches and athletes profiling individual performance (for both technical skill level and physical capacity) and fine-tuning racing strategies for crew combinations, aiming for a stable and efficient boat performance over 2000m. Colour-coded multi-dimensional graphical displays can be a powerful analysis tool in understanding SBS changes of characteristic athlete and boat-specific curve patterns in relation to the all-important performance indicator: ‘boat velocity’.

Further reading

C. Draper, KM Ting, et al, ‘Profiling rowing races and crews using visualization techniques to assess multi-dimensional boat motion’, 14th Annual Congress of the European College of Sport Science (Oslo/Norway, 2009).

K. Mattes, ‘Untersuchungen zur Stabilität und Variabilität von Ruderleistung und Rudertechnik in den Hauptphasen des Ruderrennens’ [or ‘Investigation of the variability and stability of rowing performance and technique in the main phases of the rowing race], (Aachen: Shaker Verlag, 2001).

WORDS GEORGE MUNGER

IRL

Student Diary

I started rowing and coaching in Minnesota, where athletes hold hockey sticks, not oars. I had a less than traditional collegiate rowing experience with the University of Minnesota Men’s Crew Club; I was the only person on the team who had any prior rowing experience. The club relied entirely on the walk-on system; our team recruited heavily from our student body of more than 50,000 students.

The team worked to build athletes from the bottom up; many novices came in with no athletic experience and lacked the physical ability to accomplish the rowing stroke correctly. Through training, a number of these walk-ons became cornerstones of the team.

I came into my Institute for Rowing Leadership (IRL) practicum unsure of what to expect from coaching with the Boston University Heavyweight Men. Despite my rowing and coaching experience, I was concerned that an IRA varsity programme experience would be a lot different from my rowing experience at Minnesota. Specifically, I was apprehensive that the level of skill and intensity would be over my head. However, I found quickly that the team climate is very similar to what I was accustomed to as a club athlete. The Boston University staff and rowers are, not unlike Minnesota, a bunch of guys working hard, trying to go as fast as possible; it’s not glamorous, but it doesn’t need to be.

Having my practicum with the Boston University Men gives me the opportunity to coach beneath two master coaches, Tom Bohrer and John Lindberg, and learn from their examples. Immediately, I noticed their clear vision for the rowing style of their student-athletes, and it showed. Each oarsman rows with the same stroke fundamentals, albeit at different skill levels.

The coaches initially gave me a large amount of direction and assistance, but after getting my feet under me, I quickly took on the role of leading walk-on selection. I was thrilled that the walk-on process was an important aspect of the team’s identity, and that I was given the responsibility of organizing selection. The coaching staff gave me a large amount of freedom that allowed me to use anthropometric fundamentals I learned in my Biomechanics course at the IRL to organize the process logically, refine the selection process, and identify the athletes with the most developmental potential.

Now that selection is complete, I’m moving into my role as the coach of the fifth varsity eight. Being trusted with my own group of athletes is empowering, and I am excited for what the rest of the year has in store.

Follow George’s progress through the IRL programme and BU on Twitter: @GeorgeRowsBoats.

Go West

Ocean rowing four have Indian summer

WORDS JASPER JOLLY

You would be forgiven for thinking that ocean rowing gets easier the second time. The truth is very different, according to Jamie Sparks, the skipper of the recently completed Fast Row West voyage across the Indian Ocean. "It was just appalling," says the 22-year-old, fresh from his second ocean crossing (he already completed the Talisker Atlantic Challenge in January 2014). "I've never experienced the claustrophobia, the heat, and the humidity and just the impossible sleeping conditions that I experienced on the Indian. Never even saw glimmers of that sort of pain and discomfort on the Atlantic."

The Fast Row West team of four were aiming to break the record for the fastest crossing of the Indian Ocean – 57 days, set by an eight-man crew. Despite their relative youth, they seemed like the ideal group to challenge that time. Alex Simpson (age 22) and Angus Collins (age 24) were both familiar with boats: Simpson rowed in the Manchester University M8+, and Collins works for an ocean rowing boat maker. Hamish Khayat (age 23), meanwhile, had run five marathons, and Sparks took a year off in the middle of university to fit in the two ocean rows. The ocean, however, had different ideas, with constant difficult conditions dragging the journey on to 71 days, 14 hours and 51 minutes – still the fourth fastest time ever.

Only around 20 rowing boats have made it across the treacherous expanse – compared to over 300 across the Atlantic. One of the reasons for this relative dearth of rowing attempts is the lack of following conditions, making Fast Row West fight for every one of the 3370 nautical miles from Exmouth, on the west coast of Australia, to Mahé, the largest of the Seychelles, 800 miles off the Somalian coast.

Sparks describes how the two rowing at any one time would be constantly drenched, sitting "with our heads to the right just looking at what was hitting us." Those in the know call difficult conditions "big weather", which really doesn't do justice to the battering from waves which can even break oars if it catches the rowers unawares. Fast Row West lost three oars in one stomach-churning 24-hour period, leaving them with no spares for the last few weeks.

Keeping up morale in these conditions becomes trying to say the least. For Collins, much of the motivation came from a desire not to let down those back home who had contributed so much. Little emphasis is usually given to the largely voluntary, work from those at home which enables a boat to reach the start line, as well as the essential financial support from sponsors like Fortnum and Masons, Oakley and Chriselli. Then, of course, there is the charity aspect. The thought, Collins says, of the help their row could be to the Enham Trust's disability support services "kept us going" during their constant two-hour, water-drenched shifts.

This motivation was most vital when the crew were forced by terrible conditions to change destination halfway through the row, from Mauritius to the Seychelles. Sparks describes the realization that it would be another 1400 miles instead of 800 as simply "soul-destroying."

However, the change in destination did carry some benefits. Forced over the Saya de Mahla bank, where the ocean depth rises rapidly from miles to metres, meant idiosyncratic weather, but also great conditions for wildlife. Sparks talks of hundreds of dolphins appearing near the bank, as well as luminescent seas straight from the silver screen: "You put a blade in and pull through and it would just glitter," explains Sparks, "exactly like Life of Pi."

They talked about "everything" to pass the time, Sparks says: "How you don't want to do something mundane, how you're determined to do something that stimulates you. We would talk a lot about our dreams, what we would love to do, how we're going to do it when we get back."

Whatever that ends up being though, they will do well to match the feeling of relief and return to a normality turned surreal at the end of their Indian Ocean row. "You see land, and then you see land for ages," says Sparks, "and then you see land for a whole day and it doesn't seem to get any closer. You just can't really believe you've got there." ROW360

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◀ The Sydney men's eight leads Melbourne in the Australian Boat Race with Sydney Harbour Bridge in the background.

Sydney held on to their lead to beat Melbourne by less than 10 seconds over the 4.4km course from Woolwich on the north side of Sydney Harbour to Darling Harbour on the south. The Sydney crew took the lead early on and successfully navigated tricky conditions to avenge their defeat in 2013 and regain the Edmund Barton Trophy.
Melbourne claimed their fifth consecutive title in the women's race over the same course, retaining their unbeaten record of five victories in five years in the Bella Guerin Trophy. The Melbourne women's eight never looked like losing after a strong start. The eventual victory margin of 28 seconds reflected the dominance of the Melbourne women, who ensured that honours were evenly shared between the two rival universities.

The Australian Boat Race builds on a rivalry established in the 1860s when the annual intervarsity boat race for eight-oared crews between Australian universities was a major event on the national rowing calendar. In 2009, to mark the 150th anniversary of the first race between the two rowing clubs, a time trial was held on the Yarra River in Melbourne. In 2010 the Australian Boat Race became an annual head-to-head feature, with each city hosting biannually.

The crews consist of both graduate and undergraduate rowers, with at least seven members of each crew (nine including coxswain) required to be current students. ROW360

Blue Blood

The veteran Oxford coach reflects on the state of the Boat Race

WORDS DAN TOPOLSKI

The Fours Head is the first chance to assess the varying strengths of the two Boat Race squads – and a moment to reflect on how training for the race has changed since I coached Oxford in the 1970s and '80s.

Little and much has altered in how today's Oxford Boat Race crew prepares for the big day compared to the way we used to prepare our squads. Little in terms of the broad format of the six-month build-up to the race – the type, amount and intensities of the training programme through the winter, the testing and selection timetables, the training camps, the fixtures against high-level opponents, the final fortnight programme before the race.

Much though is different in the detail and professionalism of the process. There has been a quantum leap in the funding available to the squads. We operated on a shoestring, so the team of physios, medical support, office administrators and of course professional coaches were unavailable to us. They have brought a very high degree of expertise, continuity, scientific understanding and sophisticated physiological testing to the programme, designed to bring the crews to the boil at exactly the right moment.

I was a great believer in sculling as a way to develop the boat-moving abilities of each of the rowers in my squad: his spatial and physical awareness, what actions help and what hinder the speed of a boat, and to think for himself in stressful situations. So we sculled for the first five weeks, entering all the sculling Heads, analysing and comparing progress and performances with other top national scullers.

> I would regularly have 10 or 12 guys sleeping on the floor with my mother and sister making breakfast.

We didn't do pairs, but moved straight to fours to prepare for the Fours Head – an important first measure of our strength compared to Cambridge.

As far as the training programme was concerned, I used my intuition, my Boat Race experience and the knowledge gained from rowing in the GB squad, and collaborated closely with my coaching team – all of us unpaid and giving up annual holiday leave from work to do a two-week coaching stint, working to an agreed programme. As a writer-broadcaster I was a flexible freelancer, and therefore had more time than the others to coach and to co-ordinate and deliver the programme.

Concept2 was not yet invented; we worked with one very Heath Robinsonesque prototype ergo machine to measure strength and endurance. We had no boathouse or access to a 2000 metre course, so moved between six venues every two or three weeks – Radley, Marlow, Pangbourne, Wallingford, Henley, Putney. Two two-week training camps were at Oxford and Putney, the squad staying in the homes of those who lived in London. I would regularly have 10 or 12 guys sleeping on mattresses on the floor with my mother and sister making breakfast. Now of course camps are at warm-weather overseas lakes.

The race today is a huge operation, although the television coverage, the rules and the race format itself are mostly unchanged. The press coverage was greater 40 years ago – but the crowds on the banks are the same. This year the women's varsity crews will race on the Tideway for the first time. It will be interesting to see if this move will change the character of the event. ROW360