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# FINNFARE

NOVEMBER 2016



- **EXTENDED RIO OLYMPICS EDITION**
- **Special focus on physicality and fitness**
- **Phillip Kasüske wins U23 World Championship**
- **The physical determinants of a successful Finn sailor**
- **The next generation ● Tokyo dreams**
- **Free pumping: endurance, acrobatics and horsepower**

## **GOLD** **GILES SCOTT**

Great Britain

**H**aving only lost two regattas in the past five years, Giles Scott went into his first Olympics as the absolute favourite, but was still surprised by his decisive victory. After a difficult first day, he moved into the lead on day 2 to dominate and extend his points lead to take the gold medal with a day to spare. He says the first race was the most critical *"From that point on I knew I had to be as close to flawless as possible."*

Then, *"The tenth race when I began to sail away from Vasilij to claim*



*the early gold. I was desperate to get the 20 points before the medal race. The Sugarloaf course really wasn't where I wanted my medal decided. It was such a weird 50 minute race; everything over the past 10 years had been geared towards trying to claim a gold. To have it dawn on you that you achieved that during a race is an amazing feeling."*

Was it a surprise so many favourites failed to make the medal race? *"I was a little surprised yes, however I think it just highlights the difficulties of racing in Rio. It really was a brutal place to go racing."*

*"Rio was an intense place to be. Off the water I spent all my time before the regatta desperate to be on it. I loved my time there but with the amount of days I spent there I'm OK with not going back in the near future. On the water it was a dog fight and a place to keep a cool head. The*

## **SILVER** **VASILIJ ŽBOGAR**

Slovenia

**V**asilij Žbogar achieved his goal of a dream ending to his Olympic career with another silver medal to add to the bronze and silver won in the Laser class in 2004 and 2008.

*"To get the medal with so many good sailors was really tough and stressful. I still wake up every morning and look at the medal to see if it is real or it was just a dream."*

Leading the regatta after the first tricky day was no real surprise, but his biggest challenge, and success,



was holding onto silver for the rest of the Games, surviving two huge days at sea.

*"The racing outside in strong wind was the most critical for me. The boat speed was very poor as it was physically very demanding, but I tried to make as few mistakes as possible and I survived."*

Despite being the oldest sailor in the fleet, his experience paid off as he skillfully maintained his consistency right to the end. With three medals after five Olympics he has sealed his place in Olympic sailing history.

He says one of his best memories was, *"entering the stadium at opening ceremony as flag bearer for Slovenia"*, but otherwise, *"definitely the medal race and the prizegiving. In the medal race I had a lot of (Slovenians) cheering for me on the beach."*

*"The welcome home was just*

## **BRONZE** **CALEB PAINE**

USA

**C**aleb Paine never gave up – and was rewarded with the bronze medal. He produced at least one good race each day, although often combined with a high score. He survived a protest that at first disqualified him, though he was later reinstated after video evidence was found. His best day was the fifth day of racing where he rose to fourth overall while many others fell by the wayside.

His big chance came in the medal race where, just five points



off a medal, he chose the right side and was gifted a shift that allowed him to lead the race at every mark while his main opponents languished at the back, unable to recover. *"I knew I had a good chance of securing the medal after the first weather mark rounding but sailboat racing is a wild sport so I only knew I had done it after crossing the finish line."*

While Paine was tipped for top 10 and a possible medal, he surprised many favourites didn't even make the medal race. *"No not at all. Sailing is a wild sport and who can predict who will be in the medals in a fleet that is so strong."*

*"The Olympics was an event I will remember for the rest of my life. Over 200 countries competed at the Olympic Games and the fact sport can bring them all together in the name of sport and compete peacefully on the World stage is*

racing was predictably tricky, however as a class I think we had a really good week of racing on the whole.”

Since returning home, “It’s been a bit of a blur really. I’ve had a few media commitments but other than that I’ve been full tilt into the America’s Cup programme. I couldn’t resist the temptation of getting back into some racing straight away with the AC World Series event in Toulon shortly after we returned. Having said that you really do get a bit of a feeling how much the win means to people that are alien to sailing. The Olympics really does bring our sport into the limelight.”

The future, “The uncertainty around [the Games] is troubling. I really feel for the new guys coming into the Finn with this uncertainty looming over them. I think the Finn is perfect for the Games and has served its place as the men’s heavyweight division very well and in my opinion should continue to do so for many Games to come. I think that Olympic sailing has to be careful not to play around with its identity too much. It’s never going to be like the AC or big ocean races and shouldn’t try to be. It’s Olympic sailing and should hold its core values and image close.”



On his own plans, “I’m not going to sail the Finn over the next year at all. After that we will see.”

His win makes it five Finn class Olympic gold medals in a row for Great Britain. Has it sunk in yet? “For now I think so, but we will see. It feels like it’s been a long time since I was competing in Rio already. The feeling I’m left with now is huge satisfaction.” ≈

incredible. More than 10,000 people just in my town made me speechless. The pictures speak for themselves.”

“It was really difficult regatta. I think many of the favourites tried to beat Giles and they ended up making a lot of mistakes.”

What does the future hold? “The Finn is just a fantastic boat and it has everything. It is physical very demanding, technical, adjustable, tactically demanding, nice to watch on TV. It has a bright future ahead.”

“At the moment I am working on a project with Esimit Europa. I hope it goes well because it will help a lot of Finn sailors. From the Finn I will take a break until new year, and then I will start to plan my last regatta.”

Summing up his Olympic experience, he said, “I think everybody expected the Rio Olympic Games to be a bit of a disaster. But in the end the organisers tried really hard and everything went quite smoothly. The sailing had great TV coverage and a lot of viewers had much more than expected which is the most important for sailing.” ≈



something truly magical. The Olympics fully deserves the hype it is given and represents all the best aspects of the human race. I personally have grown from the experience and will encourage young athletes to follow their dreams of going to the Games.”

Returning home, “Has been really special. I have been able to visit family, friends, and sponsors and share the medal with them. It takes an army to get someone to an Olympic medal and being able to share that with the people that helped me get there is really special. Besides that I have had some downtime, which is exactly what I needed.”

A lot of people have worn his medal, both in Rio and back in the USA. How many? “I have no idea. Let’s just say I haven’t kept it in the box and it has some scratches.”

He described the high points of the Games. “One of the moments that really stood out for me was the day before the medal race. The reserve day before the medal race, and I went up Sugarloaf with my family and it was grounding before the biggest race of my life. That and being a member of Team USA and more specifically my sailing team mates. I think with each passing day it starts



to slowly set in. Telling the stories of the Games and the experience of the event helps me come to realise what has happened.”

“The Finn is a great Olympic Class. It has a great balance of tradition sailing and modern physical demand of the Olympic Games.”

And the future? “No idea. I am in the processes of figuring that out.” ≈



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Photo: Robert Deaves



Fighting through the Rio chop  
on the second day at the Olympic Games

## President's Letter

**Dear Finn Sailors,  
Dear Friends of the International  
Finn Community**

**W**ith 2016 coming slowly to an end, first of all, please let me congratulate our Rio Olympic medallists and all other participants of our major Finn events as well as the national level Finn regattas in all age categories. The Finn is a boat which is only enjoyable to sail if the sailor is fit, strong and well trained which means that every hour of regatta sailing in the Finn is backed up by multiple hours of training, and this combined 'package' is what makes a true Finn sailor.

As most of you may know, World Sailing (formerly ISAF) has recently changed their previous decision and re-opened the discussion on the 2020 Tokyo sailing events and equipment with a World Sailing final resolution being made on this topic by early next spring followed by an IOC decision / confirmation next summer.

The above timescale means that the 2020 Olympic sailing programme is currently unknown, however the IFA Executive is confident that the decision makers will see the need for a singlehanded Olympic dinghy catering for sailors with a body weight of above 85 kg.

In the meantime the IFA Executive will make sure that all relevant Finn class data will be available for reviewing in the build-up phase before decisions are made, such as the:

- Fraternity among sailors,
- Strong class association focused on class developments (youth + geographical) and promotion,
- Steadily evolving, reliable and quality equipment,
- True athleticism embodying the Olympic motto and representing the physical aspects of the sport of sailing,
- Depth of national fleets and variety of age categories,
- Seaworthiness of the boat allowing racing in different wind and wave conditions, close and tactical racing which is easy and cheap to broadcast.

In the next years IFA will continue to focus on class development with an aim to involve as many young sailors in Finn sailing as possible and on the other hand to globalise Finn sailing with growing local fleets in new countries as well as seeing those new countries joining the international Finn scene.

The Finn is currently one of only two non-monopolistic Olympic classes, meaning that not only single builders are allowed to build hulls, mast or sails, but the possibility to become a Finn manufacturer is open to anybody if the end product is within the Finn class rules.

As a result the Finn is today one of the best quality and most durable Olympic equipment available on the market, delivering a cost effective return on the initial investment. To further reinforce the positives of our technical policy the Executive is in the process of studying recent technical developments with an objective to maintain the spirit of the Class Rules, the one-design nature of the class and the design ethos that has supported the Finn throughout its history, like price stability, well controlled development and availability.

As always I will be keen on keeping you informed on Finn related future developments, and in the meantime wish all of you fair winds and good sailing. ≈

**Dr. Balazs Hajdu**  
**HUN-1**  
**IFA President**



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**Cover photo:** Race 5 at the Rio Olympics off Copacabana.

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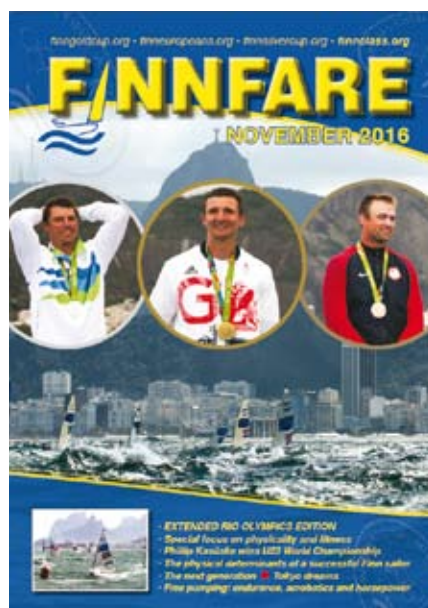
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## Major Finn regattas 2016-2018

**2016**

5-11 December • Melbourne, Australia  
**Sailing World Cup Final Melbourne**

17-22 December • Palamos  
**Christmas Race**

**2017**

22-28 January • Miami, USA  
**Sailing World Cup Miami**

24 March - 1 April • Palma, Mallorca  
**Princesa Sofia Trophy**

24-30 April • Hyeres, France  
**Sailing World Cup Hyeres**

5-13 May • Marseille, France  
**EUROPEAN CHAMPIONSHIP**

2-9 June • Barbados  
**FINN WORLD MASTERS**

June/July • Europe  
**Sailing World Cup Final**

18-27 August • Balatonfüred, Hungary  
**FINN SILVER CUP**

1-10 Sept • Balatonföldvár, Hungary  
**FINN GOLD CUP**

October • Japan  
**Sailing World Cup**

**2018**

18-25 May • El Balis, Spain  
**Finn World Masters**

30 July - 12 August • Århus, Denmark  
**Sailing World Championships (FGC)**

**The IFA welcomes bids for its major championships in 2018 (except Finn Gold Cup), 2019 and 2020.**



**Sailing World Cup**

**The 2017-2020 Sailing World Cup series of events have been announced as:**

2017: Miami (January), Hyeres (April) + European Final (late June/ early July)

2017/18: Japan (October 2017), Miami (January 2018), Hyeres (May 2018) + European Final

2018/19: Japan (October 2018), Miami (January 2019), Europe Round (May-June) + European Final

2019/20: Japan (October 2019), Miami, (January 2020) Europe Round (May-June) + Japan Final (July 2020)

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Start of race 5 in Rio off Copacabana

**A**nother Olympic Games has come and gone. Some dreams were realised, some were dashed, but everyone came away with a sense of unequalled achievement, and will forever be celebrated as Olympians. This issue celebrates our Finn heroes in Rio, as well as those who didn't quite make it. The future is quite positive with an increasing number of strong, young sailors beginning their journey to what they hope is Olympic glory

We look at the highly successful U23 Worlds in Aarhus as well as highlighting some of those who have already started their campaign for Tokyo 2020 and hope to be among those making the headlines in four years time.

The Finn class is fortunate to have a large number of specialists in their own field assisting the organisation in terms of sailor data, surveys and analysis. Ross Hamilton's latest article in these pages looks at the physical determinants of a successful Finn sailor. He begins with, "*The Finn is the heavyweight sailing class. For some this simply represents the fact that heavier people sail the Finn. In reality the term heavyweight does not tell the full picture.*"

At the 2015 European Championships in Split, Croatia, many of the Finn sailors subjected themselves to testing at the hands of a local student, Luka Pezelj. The results of that survey have taken some time to publish but the first scientific paper was published this year. He writes about that process and some of the results at the end of this issue.

To complete the theme of physicality we have a fascinating article by Mikko Brummer, who has analysed the free pumping techniques from a physiological and a vorticity perspective, drawing a comparison between the effort required by the Finn

sailor and the equivalent horsepower.

We also have an illuminating summary of the Finn class media platform that has broken all previous records and reach during 2016. We also discover that it is never too late to start sailing Finns, as Chris Juttner found out in Adelaide.

There are many themes running through this issue. I urge you to take the time to read all of it, from Nick Heiner's first steps into the Finn, to follow in his father's footsteps, to the many successful and established events run by Finn fanatics worldwide.

It is an important time for the Finn class with a lot of projects and development underway or on the horizon, and a lot of new ideas in the pipeline. Stay tuned... ≈

*Robert*

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## A dedicated follower of fashion

Piotr Kula dressed up for his final regatta of 2016 as he took his sixth Polish national title, in Gdańsk





# The physical determinants of a successful Finn sailor

By Ross Hamilton

**T**he Finn is the heavyweight sailing class. For some this simply represents the fact that heavier people sail the Finn. In reality the term heavyweight does not tell the full picture. The Finn has been an Olympic class for decades and the evolution of the class and its sailors is quite interesting to follow. As the Finn is a development class it allows for an evolution of equipment. Keeping up with modern technologies has allowed the class to advance in many areas. The class has evolved and with the result a modern Finn dinghy would perform at a very different level to its original form. This progression demands a similar development of the sailor. Finn sailors now have different physiological characteristics than their previous counterparts.

The Finn has always had a reputation as a physical class but physicality can also be argued for the other classes. The question is what sets the Finn apart from the others. The defining features are the mechanical advantages involved. While the Finn demands high levels of force output to be in control, so too does the 49er. The difference is that a trapeze

gives the sailor a mechanical advantage whereas hiking is a comparably poor mechanical lever. Modern technology has allowed us to make stiffer masts and fuller sails. This yet again increases the righting moment required to sail the boat upwind. To compensate for this the sailor must be physically suited for the task. He must be taller and heavier.

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### *The challenge presented by the Finn deservedly attracts athletes of elite physical standards*

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With the developments to the Oscar flag pumping policy there has now been a major increase in overtaking potential downwind. The lighter a boat is, the easier it is to plane and surf. Heavier sailors add weight to the boat and weigh it down. Lighter sailors in theory will plane a lot more as there is less drag preventing planing. The issue is now with pumping. The faster the boat moves the more apparent forces build. This means the

faster you go, the lesser the overall loads are when pumping. If a boat slows down then the loads increase. If a boat hits a wave awkwardly the load in the rig increases significantly. The sailor must be strong

enough to overcome these loads in order to establish planing and then maintain it. Weaker sailors often do not have the strength to build this momentum and lose very large amounts of ground on those in front.

#### **Optimal balance**

Considering this, it is clear that height and weight are not the only factors involved. There needs to be an optimal balance of body size and strength. A taller, lighter, stronger athlete will be the fastest. The initial adaptation to this is in relation to lean body mass. Any ounce of weight needs to contribute to performance and not simply be ballast. It needs to be in the form of lean muscle mass and not adipose tissue.

The overall volume of sailing during an event requires the modern sailor to be well conditioned. Without a significant tolerance to physical stress a sailor will simply break down too rapidly to perform from start to finish of an event. The more technically proficient they are, the less fatigue and stress they accumulate. They will have less to recover from. The more conditioned they are, the better their level of tolerance is and the more efficient their recovery mechanisms are.

The point of all this is that in order for sailors to take advantage of technological improvements they must be physically suited. There is a certain minimum requirement of weight and strength to get the most out of the equipment. A shorter athlete must be heavier and a taller athlete can be lighter. This forces the sailor to constantly optimize his natural physiology through strength and conditioning to meet the demands of the class.



## Technique

Looking then at technique we see even more demands. If being lighter is an advantage (in theory) then the athlete must make the absolute most of his bodymass and not have junk weight. Hiking at 100% optimum angle and posture is next to impossible. The level of isometric strength and endurance in certain muscles is simply not sustainable in such positions. However, the longer you can sustain them the greater advantage the sailor has. He must now ensure he has the most efficient

*In order to be successful he must be the most efficient machine possible*

musculature for this task. Cross sectional muscle mass is the main determinant of muscle force capacity. Larger muscle fibres tend to have lower density of capillaries and thus have a relatively poor blood supply. The sustainability of hiking is defined by tolerance to fatigue. The blood and therefore supply of oxygen is critical in fatigue management. These are structural factors in physiology and take a great deal of training to develop.

Pumping requires a much different set of demands. Now instead of isometric force the sailor must switch

to cyclical contractions and sustain individual bouts of muscle contraction and force. This is determined by a wide range of factors but most predominantly aerobic capacity and anaerobic tolerance. The more aerobic an athlete is the more sustainable his efforts can be. Experience tells that there are times when a sailor pumping downwind must push past his aerobic capacity. He will break into his anaerobic energy system to produce high force outputs. This system produces many by-products which inhibit muscle action. It is an important feedback mechanism that ensures survival of cells and prevents harm. The better trained we are, the more we can tolerate these by-products without seeing a decline in power output.

## Efficient machine

What should be clear at this point is the demands and challenges that are placed on a Finn sailor. In order to be successful he must be the most efficient machine possible to meet the capacity of the class design. For most athletes their motivation is the challenge. It is a test. A test of more than just skill. To be a successful Finn sailor you must be physically developed to a level much higher than most other classes. A lot is



determined by genetics whether or not they will ever be suitable. Looking very subjectively at the anthropometrics and physical demands of the Finn, the sailors must be of elite level. They cannot be average and will generally sit in the high percentile of most physical measures. They will be taller, heavier, stronger and fitter than the majority of the population, other athletes included. The challenge presented by the Finn deservedly attracts athletes of elite physical standards. ≈



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*Wilke masts congratulates Giles, Vasilij, Caleb and all other Finn champions for their wins and success at the major regattas around the world.*



The 2016 Olympic Sailing Competition was all it was anticipated and headlined to be – and a lot more besides. The talk going into the regatta was that anything and everything could happen. It certainly lived up to that billing, but unexpectedly the whole regatta, for Finns at least, went to schedule, barring the occasional wait for the wind. There was a good mix of everything, light days and windy days, flat water and huge waves, sunshine and stormy. No one could say the conditions favoured any one sailor in particular. However that is not really true as in fact they did – they favoured the cleverest and fastest sailor in the fleet.



The venue did prove tricky and unpredictable, even catching out eventual gold medalist Giles Scott on a number of occasions, most notably in the opening race when he had a fight on just to finish 17th. After that it was sublime sailing for the

four-time world champion, with just one more race outside the top 10, and seven times in the top three. Even if all the predictions were for him to win, it was still a surprise, even to him, that he managed to achieve it in quite the manner he did. Perhaps this is an accurate reflection of Scott's calm and casual style: no stress, no drama, just get the job done in the most efficient way.

Vasilij Žbogar's dream was to end his remarkable Olympic career with a third medal. He was the oldest Finn sailor in Rio and felt the demands of Rio on his body more than most of the fleet, but his experience paid off and the silver medal was a just reward for the effort he has put in over six years in the class.

Compared to the other two medalists, Caleb Paine had an inconsistent week, dramatically survived a potentially decisive protest, and then rallied towards the end of the week to put himself right back into contention for a medal. His confident win in the medal race put the bronze almost beyond doubt from the first mark.

#### Day 1 – young and old

The opening day was a day in which most of the favourites saw a different end of the fleet to normal and would prefer to forget. Sailed under the Sugarloaf mountain it was always going to be the hardest day of the week,



but no one expected it to be as hard as it was. It was a day was full shocks and surprises as the fleet suffered 40 degree shifts and huge pressure changes that

*The talk going into the regatta was that anything and everything could happen. It certainly lived up to that billing*

mixed the order on almost every leg. But the show was on TV so it had to continue. The youngest sailor, Facundo Olezza won the first race, while the oldest sailor, Vasilij Žbogar won the second.

Alican Kaynar was the early leader in the opening race before Deniss Karpak took the lead downwind after a huge right shift turned the first run into a reach. Olezza was next up to take the lead on the following downwind to lead through to the finish from Kaynar and Žbogar.

# Superior Scott secures Rio Gold

**RIO 2016 OLYMPIC SAILING COMPETITION - FINN CLASS**

Pos	NOC	Name	1	2	3	4	5	6	7	8	9	10	MR	Total	Net
1	GBR	Giles Scott	(17)	3	2	1	11	1	1	3	8	2	4	53	36
2	SLO	Vasilij Žbogar	3	1	7	10	(15)	9	5	4	9	8	12	83	68
3	USA	Caleb Paine	7	10	(21)	3	14	2	17	7	10	4	2	97	76
4	BRA	Jorge Zarif	4	6	11	(22)	2	19	2	13	15	9	6	109	87
5	CRO	Ivan Kljakovic Gaspic	6	8	10	(15)	8	8	4	10	2	13	20	104	89
6	SWE	Max Salminen	(15)	11	13	9	7	5	6	11	7	5	16	105	90
7	NZL	Josh Junior	18	(dsq)	14	14	5	3	18	2	4	6	8	116	92
8	AUS	Jake Lilley	16	(ufd)	8	6	6	4	3	5	23	16	10	121	97
9	ARG	Facundo Olezza	1	9	19	18	16	(22)	10	6	1	7	14	123	101
10	NED	Pieter-Jan Postma	14	13	12	4	4	6	14	1	19	(dsq)	18	129	105
11	GRE	Ioannis Mitakis	12	(dnf)	3	2	13	12	21	9	13	3		112	88
12	HUN	Zsombor Berecz	9	(ufd)	5	12	1	7	12	18	16	12		116	92
13	TUR	Alican Kaynar	2	5	6	(19)	19	13	8	17	12	11		112	93
14	FRA	Jonathan Lobert	10	(15)	1	7	12	14	11	12	14	14		110	95
15	FIN	Tapio Nirkko	20	7	15	5	3	(dnf)	20	21	6	10		131	107
16	DEN	Jonas Høgh-Christensen	13	2	4	(dnf)	10	11	16	16	17	20		133	109
17	NOR	Anders Pedersen	8	16	18	8	(22)	16	9	14	5	15		131	109
18	ITA	Giorgio Poggi	11	4	16	11	18	15	7	(19)	11	18		130	111
19	URU	Alejandro Foglia Costa	21	(ufd)	9	17	20	21	15	15	3	1		146	122
20	EST	Deniss Karpak	5	14	17	20	(23)	10	13	8	18	21		146	126
21	CAN	Tom Ramshaw	19	12	(22)	13	9	17	22	20	20	19		173	151
22	CHN	Lei Gong	22	(dnf)	20	16	21	20	19	22	21	17		202	178
23	SEY	Allan Julie	(23)	17	23	21	17	18	23	23	22	22		209	186

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**EQUIPMENT USED IN RIO**

Nation	Sail 1	Sail 2	Mast 1	Mast 2	Boom 1	Boom 2	Rudder 1	Rudder 2	Hull
ARG	North	WB	Wilke	Wilke	Devoti	Devoti	Devoti	Devoti	D-Fantastica
AUS	North	North	Wilke	Wilke	Art of Racing	Devoti	Devoti	Devoti	D-Fantastica
BRA	WB	Doyle	Wilke	Wilke	Needlespar	Devoti	Devoti	Devoti	D-Fantastica
CAN	WB	WB	Wilke		Devoti		Devoti	Devoti	D-Fantastica
CHN	North	WB	Hit	Hit	Devoti	Devoti	Devoti		D-Fantastica
CRO	North	North	Pata	Pata	Devoti	Devoti	Devoti	Devoti	D-Fantastica
DEN	North	North	Wilke	Wilke	Devoti		Devoti	Devoti	D-Fantastica
EST	WB	WB	Wilke	Wilke	Needlespar	Devoti	Devoti	Devoti	Devoti Classic
FIN	WB	WB	Wilke	Wilke	Devoti	Devoti	Devoti	Devoti	D-Fantastica
FRA	WB	WB	Wilke	Wilke	Devoti		Devoti	Devoti	D-Fantastica
GBR	North	North	Wilke	Wilke	Needlespar	Needlespar	Petticrow	Petticrow	D-Fantastica
GRE	North	WB	Wilke	Wilke	Sparcraft	Needlespar	Devoti	Devoti	D-Fantastica
HUN	WB	North	Wilke	Wilke	Devoti	Devoti	Devoti	Devoti	D-Fantastica
ITA	WB	WB	Wilke	Wilke	Devoti	Devoti	DEM Foils	DEM Foils	D-Fantastica
NED	WB	North	Hit	Hit	Devoti		Ron Bull	Ron Bull	D-Fantastica
NOR	North	WB	Wilke	Wilke	Devoti	Devoti	Devoti	Devoti	D-Fantastica
NZL	WB	North	Wilke	Wilke	Art of Racing	Devoti	Devoti	Devoti	D-Fantastica
SEY	WB	WB	Wilke	Wilke	Devoti		Devoti		D-Fantastica
SLO	North	WB	Wilke	Wilke	Devoti		Devoti	Devoti	D-Fantastica
SWE	WB	WB	Wilke	Wilke	Devoti		Devoti	Vic	D-Fantastica
TUR	WB	WB	Wilke	Wilke	Devoti	Wilke	Wilke	Devoti	D-Fantastica
URU	North	WB	Wilke	Wilke	Devoti		Sea Shore		D-Fantastica
USA	North	North	Wilke	Wilke	Art of Racing	Needlespar	DEM Foils	DEM Foils	D-Fantastica



Vasilij Žbogar: *“The fleet is really strong and everybody is very close so making small mistakes can lose you five to ten places very easily. We knew the left was much better but with this place you never know actually.”*

The second race was sailed in slightly more stable winds, at least in terms of pressure but still lacking in any particular direction. Žbogar held a nice lead at the top after favouring the left, but on the second upwind, Zsombor Berecz went right and popped out ahead, while Žbogar covered the majority on the left. However, the Hungarian, along with NZL, AUS and URU were all pulled out after a starting penalty to leave Žbogar the

winner from Jonas Høgh-Christensen and Giles Scott.

Scott: *“I’m not massively happy with how today has gone. It’s certainly not the way you want to start an Olympic Games but unfortunately these things happen in regattas, and they have certainly happened to me over the past four years.”*

After two races, Žbogar held a three point lead over Kaynar and a six point lead over Olezza.

#### Day 2 – high seas

Racing on the Niteroi course area out on the open ocean, the Finn fleet excelled in the huge waves and big winds. Scott put his worries from the first day behind him to record the performance of the day to move into overall lead.

The conditions were full on in all regards. With a strong, cold wind, and big, breaking waves catching out the unwary, the lights along Copacabana shone brightly through the murk. It was definitely not the Rio in the brochure, but the Finn sailors loved it all the same.

Ioannis Mitakis led round the top mark in the first race of the day after some confusion in the bad visibility



DAY 1 ON THE PÃO DE ACUCAR (SUGARLOAF) COURSE AREA





DAY 2 ON THE NITERÓI COURSE AREA IN BIG WIND AND WAVES



over the marks. Berecz took the lead downwind, but then Jonathan Lobert, who had rounded third, moved ahead on the second upwind to lead into the finish from Scott and Mitakis. Four sailors later requested redress after heading to a wrong set of windward marks, but to no avail.

Scott went one better in the next race, to lead at every mark to win by 50 seconds. Mitakis again produced an outstanding performance in the challenging conditions to cross second, while Caleb Paine made up for a poor first race with a third place finish.

Scott: *"It couldn't have been more different today. It was a big change in racing and approach."*

Pieter-Jan Postma: *"In the last race I was in the game, I need to build on that. The results are all over the place. It is hard but it doesn't matter if it's hard, as if it's hard it's challenging and that's good."*

After all that, Scott took the lead, Žbogar dropped to second, and Kaynar dropped one place to third.

### Day 3 – magical Copacabana

You had to see it to believe it and it wasn't on TV, but the third day was a spectacular day of sailing with big winds,

huge seas and even bigger stakes.

The sailors awoke in the morning expecting a nice quiet day inside the bay, but the organisers had changed the schedule to put them on the Copacabana course area outside the bay as it was deemed too dangerous for



**Jake Lilley: "I think the four races so far show two things, the level of the fleet and how difficult the conditions are here. But it's a really long week and I liken it to racing the Tour de France as opposed to the 100 metres."**

the multihulls. But dismay soon turned to delight as the conditions allowed the Finn sailors to show what they are made of – a gladiatorial battle at the extremes of what is sailable. With the wind pushing past 25 knots, and 2 to 3 metres waves, on an even larger swell coming down the course, it was no day to be shy. Scott moved into an 11-point lead and with Žbogar fighting hard to hang onto second, Berecz rocketed up the fleet to third after a great performance.

In the first race, Jorge Zarif knew where he was going and led round the top mark from the right corner. But



THE HUGE DAY 3 ON THE COPACABANA COURSE AREA



Berecz was not far behind and took the lead on the second upwind to take the win from Zarif and Tapio Nirkko. Scott made a crucial mistake and was too late to the right to catch the leaders.

The second race followed a similar pattern with perhaps slightly more wind and slightly larger waves. This time, Scott, got it right and, after passing Lilley on the first downwind, led round the rest of the course for an impressive win. Paine crossed second, with Josh Junior securing third.

This was the day of the protest against Paine that would haunt him until

the medal race the following week. Ivan Kljakovic Gaspic protested him in race 6 for a port-starboard incident on the start line, claiming to have borne away to avoid a collision. Paine was initially disqualified, but the next day found video evidence and the jury dismissed the protest and reinstated Paine in second place in the race.

Zarif: *"I think the secret today was to find a good line to cross to the right and I had a good line and good boat speed and I was lucky to cross fully to the right."*

Berecz: *"the greatest day in my sailing career. I can't be happier than this. I was a bit disappointed in the morning when they moved us from the inside course to the outside. But as we were on Copacabana we only had the waves coming from one direction so it was more manageable than yesterday."*

Scott: *"I think*

*the important thing to remember is that everyone has big scores now. I don't think there is one person who has been massively consistent so you really have to fight for every single position, no matter where you find yourself. There is still a long way to go and it's going to be tough."*

#### Day 4 – was a lay day

Some needed it more than others.

#### Day 5 – Scott in control

Scott exerted his control over the fleet as the Finns returned to the water. Instead of the scheduled sea course, the fleet was sent to the furthest inshore course, the Ponte course, by the road bridge crossing Guanabara Bay.

The day belonged to Scott, Žbogar and Lilley, the only sailors to get two good results all day. But the racing was incredibly close. After 50 minutes of full-on racing, these world-class athletes were separated by just seconds. No one gave an inch. Every inch was fought for very hard. There was no let up until the line was crossed.

The right-hand side was clearly the preferred choice, but the reality was subtly different with gains to be made





on the left and also the middle. Lilley led round the top mark in race 7, but Scott soon took the lead downwind to extend around the course for the win. Behind him it could not have been closer. The biggest mover was Jorge Zarif coming through from 15th at the top to move into second at the final downwind mark to lead Lilley into the finish by a few seconds.

Race 8 was almost as close, with Jonas Høgh-Christensen finding the top mark first after favouring the left side, but it all went horribly wrong from there in, losing 15 places before the finish. Postma rounded in second and took the lead on the first downwind, never to be threatened again. Junior was the biggest climber, coming through from 11th at the first mark to second at the finish, while Scott extended his lead overall with a third place finish.

Scott: *"Having the points margin is a big confidence booster, but the thing for me to focus on is that it isn't over, you can't get complacent, you need to attack tomorrow, like I've done today."*

Going into the final day of qualification Scott extended his lead to 17 points, with Žbogar maintaining second. However third place again

**Tom Ramshaw: "I don't want to leave here with any regrets. For the next quad I am going to have four years of preparation...being here is a lot about getting the experience."**

changed hands, with Lilley reaping the rewards of a consistent day.

**Day 6 – Scott seals gold**

Giles Scott got the job done early after two more light wind races on Niteroi course area on the sixth day. Again, Rio's challenging conditions provided a mixed bag of results, with several sailors picking up high scores.

With no clear form through the fleet apart from Scott and Žbogar, it was always going to be a scrap to the finish, with the points around the medal race cut off very, very close. For the fifth day in a row it was all change once again.

After a long postponement, first ashore and then afloat to wait for the



wind, Kljakovic Gaspic started his day leading round the top mark in race 9, in very light winds. He was passed on the second upwind by Olezza who maintained the lead all the way to the finish. Alejandro Foglia, who had rounded the top mark in 15th, finally found his speed to cross in third.

After struggling with his form all week, Foglia then won the day by going on to win Race 10 after overtaking Scott on the final downwind. Paine had



DAY 5 ON THE PONTE (BRIDGE) COURSE AREA





THE DECISIVE DAY 5 ON THE NITERÓI COURSE AREA



rounded first but dropped to fourth while Mitakis ended the race where he started, in third.

To make sure of the gold with a day to spare, Scott had to gain three points on Žbogar. In the first race of day, he looked to have opened out a nice margin, only to lose ground on the second upwind and finish just one place ahead. In the final race, Scott just had to finish more than two boats ahead of Žbogar. For a while Žbogar was right behind Scott, but a few errors on the second upwind let Scott escape, and the gold was gone.

Meanwhile Olezza followed up his race win with a seventh to climb back in to the top 10 again. A last place for Lilley in race 9 initially dropped him out of the medal race, after going into the day in third, but after Postma was disqualified from race 10 after a start line infringement, Lilley gained one point to overtake Mitakis and was back in the medal race.

While Scott took an unassailable 24 point lead, Žbogar remained second, 13 points ahead of Kljakovic Gaspic in third.

Žbogar: *"It was a really difficult day, really stressful because the wind was up and down. Puffs of wind were all over*

**Max Salminen: "We expected mixed conditions and we got very mixed conditions. Maybe surprisingly mixed actually but all in all, a little bit like we expected."**

*the race area and it was impossible to predict, so very tough mentally."*

*Scott: "I just found myself welling up and in tingles as it slowly dawned on me what I'd done. I wouldn't put myself down as the emotional sort but I had a little cry to myself, which I like to think I don't do that often."*

#### Day 7 was another lay day

#### Day 8 – medal day

Scott still had to sail the medal race, but the result for him was irrelevant. He could not be beaten. Mathematically, any boat in the top 10 could win a medal, and while Žbogar was almost secure for a medal, Paine or Max Salminen were the greatest threats to Kljakovic Gaspic.

While most sailors favoured the left side of the upwind, Paine saw some pressure to the right and was rewarded with a monster shift into the first mark that gave him a 30 second jump on the fleet. He cruised away to an easy victory, and with both Gaspic and Salminen in the second half of the fleet, he had one hand on the bronze by the first mark. As he came into the finish, looking back to count the places, the realisation of what he had done dawned on him and his smile got bigger and bigger, until he crossed the finish with a whoop of joy, fist in the air.

With Paine leading the race, Žbogar had to make sure he was not last, otherwise he would drop to bronze position. He rounded the top mark in eighth, close on Gaspic's stern, but passed him downwind to eventually cross the finish in sixth to take the bronze. His emotion was intense. As he crossed the finish he looked as if he was not quite sure what he had done and how to react to the achievement. But soon the emotion, relief and joy overcame him.

For the fifth Olympic Games in a row, Great Britain won the gold medal in the Finn class. Scott was back to his

normal, casual, largely unemotional self. He rounded the top mark fourth, was soon up to third, then second and was chasing, and catching, Paine down the final run. A wave of acknowledgement as he crossed the finish line marked the end of his Olympics and the affirmation of the gold medal. The job was done.

Paine: "It's pretty awesome. It's been a pretty tough regatta and to be able to come away with a medal at the end is a great feeling. It was a tough push and a hard medal race but fortunately enough it makes it easier when you hit the right shifts off the bat and I just had to make sure I didn't mess it up."

Žbogar: "I feel relieved that it's over. It just went well. I was only dreaming of it one week ago. My body is a bit old and I was struggling over the last few years and I continue pushing all the time. Fortunately, my mind is still 20 years old and I pushed every race as much as I could. I had nothing to gain in the medal race. I had everything to lose."

Scott: "It was great to be able to go out and enjoy that race today. The 17th place on day one on the Sugarloaf course was not the way I wanted to start the regatta and it wasn't until day three or four that I started to believe that the

**Giles Scott: "Winning four World Championships is great, but this is one that everyone wants and everyone remembers, so now to have an Olympic gold is a great feeling."**

gold was in my grasp. A lot of people say that there's a lot of sacrifices, but in all honesty we all very much enjoy what we do and they're not seen as sacrifices. Yes it's hard work, but there's a lot of enjoyment in there so it doesn't feel like I've sacrificed a great deal."

In the end it was a tough, challenging week in Rio for the Finn class. Most of the 'favourites' failed to live up to expectations and many failed to even make the medal race. This speaks volumes about Rio as a venue, but more importantly about the competitive depth within the Finn class at the moment. The racing was as tight as the class had ever seen, the complex conditions stretching every sailor through the light days and the epic, monumental days at sea with



monster waves. But all along, one man was perhaps destined to dominate and come away with the gold medal.

The Rio 2016 Olympic Sailing Competition for the Finn class was an absorbing battle of wits, skill, strength and mental stamina. The three worthy medalists highlight the diversity of sailors and the skill sets required to conquer the Finn as well as Rio's challenging conditions. Caleb Paine, brimming with young ambition, hard work and a sense of optimism; Vasilij Žbogar, the veteran of five Olympics, with huge experience and skill, and still not quite believing he has achieved his dream ending; and Giles Scott the undisputed king of Finn sailing in this quadrennium. ≈



MEDAL RACE DAY BACK ON THE PÃO DE ACUCAR COURSE AREA





# Finn Class media reaching the world

**G**reat venues, great conditions and great winds are the prerequisites for any successful sailing media package and this year the Finn class has benefitted from all three in ample measures at its major championships, culminating with two weeks in magical Rio for the Olympic Games.

With visits to Barcelona, Gaeta, Torbole and Aarhus preceding the Olympic Sailing Competition, the class was not only able to showcase the athleticism of its sailors, but also produce spectacular imagery of the sometimes brutal Finn sailing at the highest level.

This all helped to create the most successful year ever for the class in terms of coverage and reach. The main focus for the year has been on producing quality content for social media channels, especially Facebook and Instagram, and this culminated with a Facebook Reach in excess of 1.8 million during August, far surpassing targets and realistic expectations.

While the Finn class media platform receives worldwide acclaim, it is still largely limited to traditional journalism and budget-constrained updates through social media and other online activity.

However, it is still possible to reach a huge audience with these inexpensive means with the right approach.

The backbone to all class content is its press releases, including interviews, previews and race reports, video highlights and photographs. These are published on the principal website, [finnclass.org](http://finnclass.org); distributed to a mailing list of 2,000 journalists, media organisations, sports bodies and sailors; and shared on social media.

Finn Class media output is largely focussed on generating content for use by third parties and shared by social media, including video and photographic materials provided free of charge to federations and news organisations. As such there is little emphasis on generating website hits or event site stats as these are the lesser-used parts of the class media platform.

The Finn class media platform consists of the following:

## 1. Press releases

Press releases are distributed to more than 75 countries worldwide and published by countless websites. Coverage can only be estimated, but the estimate of total 'impressions' of content

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**"...during the Olympics there was a 7-day maximum reach [Facebook] of 1.1 million and a maximum 28-day reach of more than 1.8 million.."**

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exceeds 250,000 a day – it is very hard to quantify exactly. Many countries also translate the releases for local readers. During the 12 months prior to August 2016, the class released more than 150 press releases, not only providing perhaps the most in-depth coverage of any sailing event or class in the world, but also providing widespread coverage, and hence great value, for sponsors and advertisers.

## 2. Social media channels

**Facebook:** Through high quality content and sponsored posts, Facebook followers increased by more than 80% to 12,000 over the six months to August 2016. In terms of reach, outside of events this ranges from 50,000 to 100,000 people, while at the major championships it often exceeds 300,000. However during the Olympics there was a 7-day maximum reach of 1.1 million and a maximum 28-day reach of more than 1.8 million.

**Twitter:** Twitter is used extensively at class events and is also connected to all other channels. There was an 11% increase in followers between March and August to 4,350. Tweet impressions at the Olympics exceeded 122,000, though at class events this is normally 250,000 to 350,000 through increased direct use.

**Instagram:** Use of this channel started in March 2016. By August it had 2,500 followers with quality



images posted daily from June to August.

**YouTube:** The Finn class also operates a YouTube channel. It has 2,000 followers with a total of more than 1 million video views.

**Flickr:** The Finn class Flickr page now has more than 7,000 royalty free photos for editorial use from all major events.

### 3. Video production

At the class major championships, daily highlights and VNR content is produced and made available free of charge. Since 2015 the class has engaged Beau Outteridge Productions to produce its video content, which has significantly increased the quality and exposure of the material.

Daily highlights are posted on Facebook as well as YouTube. On Facebook there were half a million video views from March to August including 75,000 views (2016 Europeans 2016) and 130,000 (2016 Finn Gold Cup). During the same period, there were 140,00 YouTube views. Facebook Live was also used to great effect at the 2016 Finn Gold Cup.

### 4. Websites

The class operates five websites. [finnclass.org](http://finnclass.org) is the 'corporate' site and in the year to August 2016 it received just over 370,000 visits serving up 3 million pages. [finnworldmasters.com](http://finnworldmasters.com) is the platform for the Finn Masters with 25,000 visitors and serving up 300,000 pages during the year ending August 2016. The class also operates three event sites - [finngoldcup.org](http://finngoldcup.org), [finneuropeans.org](http://finneuropeans.org) and [finnsilvercup.org](http://finnsilvercup.org). These were established for the class major championships with each year being a new prefix - i.e. 2016. [finngoldcup.org](http://finngoldcup.org) - to maintain the annual sites for future reference. These are used in conjunction with [finnclass.org](http://finnclass.org) and handle up to around 85,000 visitors serving up to 150,000 pages (2016 Finn Gold Cup).

### 5. Magazines

The class has published its FINNFARE magazine for more than 55 years, which is distributed worldwide as well as being available as online page turning editions. For the last few years the class has also published the Finn Masters Magazine to cater for the large Masters sector of the class.

### 6. Stern mounted cameras

The Finn class developed and introduced stern mounted cameras in 2007 and while the current equipment is now dated (early GoPro units) it has produced some exceptional content over the years, and in many respects, better content than

the much more expensive equipment used by OBS at the Olympic Games. The challenge now is to move onto the next level, providing live feeds from the cameras - generally 10 cameras are used for each boat in the medal race - fed through the event website. This also negates the need for time consuming and meticulous editing of material from 10 cameras post event.

The Finn Class media package has been developed over decades, but over the past eight years it has been transformed by use of modern technology and social media. Further development is now largely constrained by financial limits, rather than purely ingenuity and industrious journalism.

The story is always of the utmost importance, the challenges faced by the sailors to get to the start line, and then to the finish line. Though the story is often far more important to general viewers than any specific racing action, the Finn class benefits by having some of the most visually striking, athletic and interesting sailors in the sport and getting this across in short action clips, absorbing stories and dazzling photographs is the key driver for the media team each day on the water. Some days are easier than others.

The footage of the two big days held outside Guanabara Bay during the 2016 Olympics would arguably have produced some of the best footage ever taken of the Finn class: huge waves, high winds, with big, strong sailors conquering the extreme conditions, all set against a simply stunning backdrop. It was the perfect combination of conditions for showcasing the Finn and Olympic sailing at its best. However these golden moments generally remain under lock and key. While some viewers around the world did manage to see something of the sailing in Rio, it would appear a lot did not.

The search for more TV coverage, or online footage, produced the most feedback during and after the Games,



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**“...the Finn class benefits by having some of the most visually striking, athletic and interesting sailors in the sport and getting this across ... is the key driver for the media team...”**

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with many fans desperate to see some action but unable to find any. With the Olympic classes unable to produce any content of their own, it does seem ironic that at a time when the media coverage of classes is under scrutiny by both World Sailing and IOC, that the footage that would enable them to achieve these aims is held beyond reach by the same body requiring the exposure.

In fact the only footage available in the public domain from Rio (as far as we know) is edited highlights of the medal race, lasting just 12 minutes. Contrast that with several hours, including two full races, from London 2012.

As people's attention span gets shorter and shorter, it is not just affecting the media but also the nature of the sports played out. The call for faster boats, shorter races, smaller fleets and more sensationalist news, will come at a cost. Meanwhile, simply posting reports, photos and updates is no longer enough for the modern generation, where constant, real time updates are required to satisfy the need for instant gratification. That also comes at a cost.

As seen in other areas of the sport, bigger budgets allow a much wider range of coverage options: tracking, live feeds, commentary, graphical representation and interpretation. However, without extensive sponsorship this is beyond the scope of Olympic classes. It is being worked on, but there is no easy answer without significant financial and professional assistance. ≈



## Free pumping: endurance, acrobatics and horsepower

**T**he Finn has always been the most physical of the Olympic classes. In the old days, the physicality used to be associated more with upwind sailing, hiking out and playing the waves with leg kicks for leech flicking. With free pumping in more than 10 knots of wind, introduced in 2010, downwind has become the most physical part of sailing. And maybe interestingly, the physically most demanding conditions in Finn sailing are now in the range of 10-12 knots, rather than in truly heavy air, at least when it comes to aerobic exertion.

Finn sailors are tall, 185-200 cm, and heavy, with a bodyweight ranging from 90 to 110 kg. To master the 10.8 sq.m sail they need to be strong, fit and tolerant of long periods of concentration and physical exertion. Sailing the Finn is probably the purest athletic experience in world class sailing, equaled perhaps by only the windsurfers.

We attempt here to understand downwind sailing better with the help of aerodynamic computer simulation, as well as taking a look at the physical demands of free pumping. For this, we have picked the motions of the boat and the rig from video footage. In addition to actually pumping the sail one to one, the mainsheet coming straight from the boom to the hand, the sailor rocks the boat through body movement. The enforced motion is said have 4 degrees of freedom (4DOF), around the longitudinal axes of the boat as well as the vertical. Ideally you have synchronised videos from different angles, to capture the



Upwind, the sailor's pulse is around 80% of max, but hiking and leech flicking with the thighs require maximum strength and endurance. Upwind work is more static than the extremely dynamic downwind free pumping.

motion. In 10 knots, at the limit of free pumping, the boatspeed is totally dominated by the action of the sailor, who is literally rowing the boat through the water, with the sail as his oar or paddle in the air.

So you need to be fit, but the crucial thing is not fitness alone, but the timing and rhythm of the pumps and rocking.

There's an optimum roll and pumping rate for any given windspeed, associated with a periodic shedding of vortices, alternately from the luff and the leech. This relates loosely to a quantity called the Strouhal number ( $St$ ), a dimensionless number describing oscillating flow mechanisms. Simulating



Tapio Nirkko's heart rate, from a training session on the Medal race course in Rio. Note the 12 min run, with an average heart rate of 172, rising to 194 towards the end.

“Sailing the Finn is probably the purest athletic experience in world class sailing...”



In heavier winds and waves, the sailor often need to push with his foot and weight against the sail, this too acting as an efficient pump.

in the computer, we can study the effect of roll and pumping frequency on the sail driving force. The complex 4DOF motion, added with the oscillation of the sail, is also a challenge for the aerodynamic simulation, to say the least.

Synchronizing the pumps with the rocking is important – if you start to roll the boat to leeward with the sail still too much in, you backwind and collapse the sail, and stop the boat. Getting back to the rhythm will take its time, and you are likely to lose places. Add waves and sailing by the lee into all this, and it gets very complex.

#### From a parachute to a wing

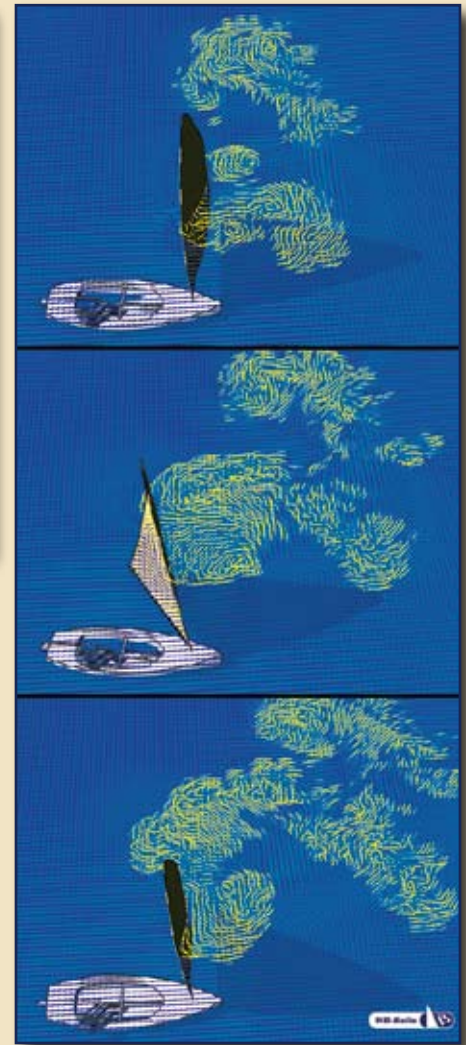
On a downwind run, the sail acts like a parachute, creating mostly only drag. The direction of the apparent wind is nearly the same as the true wind, but slowed down by the amount of the boatspeed. However, the rocking of the boat adds a sideways component to the local apparent wind, especially in the upper part of the sail, swinging faster and further than the lower parts. This creates lift in the upper part of the sail, which now acts as a wing in the same way as when sailing upwind. You can witness this is really happening by fixing a windex at the mast head, and watching it swinging from side to side as the boat is rolling. According to the simulation, this lift can be more than half of the drag, considerably adding to the drive of the boat. The swing and the pump increases the apparent wind, and since the sail force grows as the square of wind speed, the thrust of the sail is further increased. The extra lift is larger when the boat is swinging to windward – obviously, the sail works better as a wing with the mast

**“The complex 4DOF motion, added with the oscillation of the sail, is also a challenge for the aerodynamic simulation, to say the least.”**

facing forward. Looking at numbers, the average driving force (thrust) through a pumping sequence is 300 N, while in the static case (neither pumping nor rocking), the driving force is 175 N – that's a 70% increase in drive.

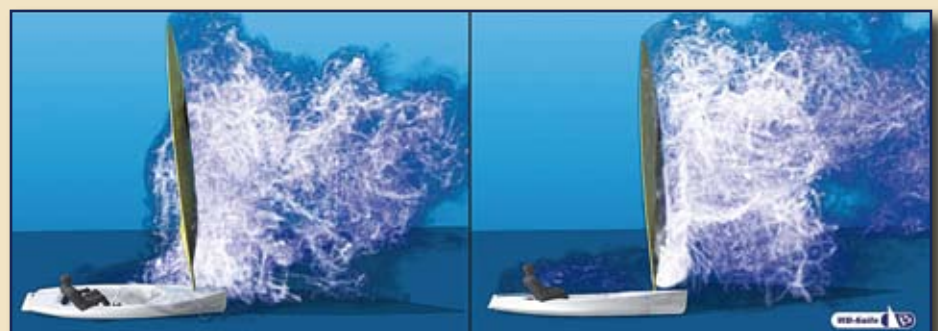
When the boat is swinging back, from windward to leeward, the direction of the apparent wind shifts and the leech of the sail becomes the luff. In this instance, it's important that the sail is far enough forward, pulled by the bungee loop, or else it will collapse from backwinding. In heavier winds and waves, the sailor often needs to push with his foot and weight against the sail, this too acting as an efficient pump.

Pumping affects things under the water as well. The heeling of the boat causes alternately weather helm and lee helm, countered by the rudder, sculling the boat forward probably nearly as efficiently as the sail (another area to



Above: Van Gogh inspired flow-scenery showing vorticity behind the sail at different stages of dynamic pumping. The maximum sail drive, about 600N, is achieved in the first frame, about 0.2 seconds after the pump is initiated. You can distinguish a strong eddy at the leech. In the second frame, the sail is all in, with about 200N drive left, and in the third back out again - now there's pressure in it, and the sail driving force is nil. The average driving force (thrust) through a pumping sequence is 300 N, while in the static case (neither pumping nor rocking), the driving force is 175 N – that's a 70% increase in drive.

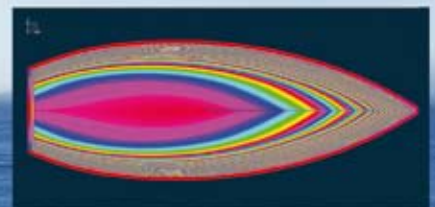
Below: Turbulent structures behind the Finn sail in free pumping. On the left, the 'empty' sail, being returned forward by the bungee. On the right, just after the initialisation of a new pump. You can distinguish a strong vortex rolling under the boom, already a little detached from the leech. Our Finn free pumping simulation is a work in progress, more about the results hopefully in a study to be published later.



# Hit trailer



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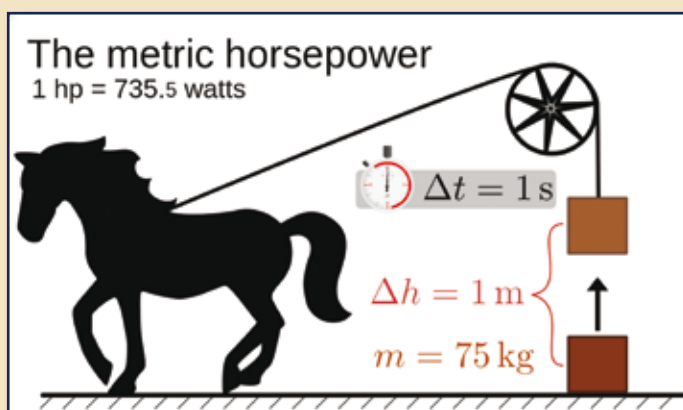
movement of the boom fitting of about 2 metres, the power of the Finn sailor on a free pumping run would be 0.33 Hp, or 250 Watts in more modern units. So a top Finn sailor is worth one third of a horse. For further comparison, the work done by a fit Finn sailor in an ergometer is around 450 W, over 3 minutes, and in a rowing machine around 350 W. On the rowing machine, a top Finn sailor can achieve a peak power of 700-980 W in a burst. For comparison, the best Laser sailors achieve 550-700 W.

**“...a top Finn sailor is worth one third of a horse...”**

Most of the work in lighter air pumping is done by body displacement, rather than the biceps in the sailor's strong arms: standing up, reaching forward, moving to the lee side, and back to the windward tank. Gravity helps here too, as the sailor uses his weight against the sheet, leaning back with the boat heeling over. Again, you can understand that timing is crucial.

study through simulation). In the 10 knot range, without waves, the heading of the boat is kept relatively constant, and the rudder is not used for steering (or actively sculled), but merely to hold the boat on course as the pumping of the sail is twisting it off course.

The free pumping run is mostly an aerobic session, with a heart rate close to and over 185 b/m for the duration of the run that normally lasts about 12 minutes. The use of all major body muscle groups taxes oxygen uptake considerably, and requires fitness but also excellent coordination and balance. Towards the end, lactate starts to build in the muscles, the sailor's mind is getting fuzzy and obviously the capacity to make brilliant tactical choices is impaired. Consequently, relevant aerobic training to facilitate both recovery and to underpin the dynamic activities of sailing are warranted as part of a training regimen, as well as exercises in co-ordination. Upwind, the sailor's pulse is around 80% of max, 145-155, but hiking and leech flicking with the thighs require maximum strength and endurance. Upwind work is more static than the very dynamic free pumping downwind.



There's a certain analogy between the Finn sailor pumping and horse power: One horsepower is defined as the work done in lifting a weight of 75 kg in one second to the height of one metre.

**“The free pumping run is mostly an aerobic session, with a heart rate close to and over 185 b/m for the duration of the run...”**

In heavier winds, and with waves, the pumping is different, and there are various strategies to achieve a similar performance. The sheer pull of the one to one sheet requires muscle, while the pumping is not nearly as frequent as in the 10 knot range. Usually a few quick pumps does the job to catch a wave, but sometimes, for instance to move sideways in the fleet for tactical reasons, intensive 30 second sessions with constant pumping can be very demanding. In really hard winds, a way to achieve a quick leech flick or pump, is simply to let the sheet go, smacking to the knot, shoving the boat forward in a bang - not for the faint hearted. Free pumping is a very complex technique, taking years of training to master.

**"If you were a race horse..."**

There's a certain (funny) analogy between the Finn sailor pumping and horsepower: One horsepower is defined as the work done in lifting a weight of 75 kg in one second to the height of one metre (see the sketch from Wikipedia). From our simulation, in 10 knots of true wind, the pull on the sheet varies between 0 and 37.5 kg, in a typical 2 second cycle. That would suggest an average force of 12.5 kg over a 1 second pump, from max force to an “empty” sail, zero force. With an assumed

During the Kingston Olympics in 1976, there was a charity event with sailors invited. The Finn sailors stood out in the crowd, heads taller than the rest. I was watching an old lady with diamond jewellery around her neck approaching the Swede Ingvar Hansson, grabbing him by the sleeve and saying, "Young man, if you were a race horse, I would buy you." I bet Luca had similar offers in his time... Finn sailors are true athletes standing out in any crowd. ≈

*by Mikko Brummer  
With the kind expertise from Tapio Nirikko & Jocke Wilenius*





# Kasüske conquers Kaløvig to lift U23 World title in Aarhus

**P**hillip Kasüske lifted the first ever U23 Finn World Championship (previously called the Junior World Championship) after a thrilling week at Kaløvig, near Aarhus. The name and age designation of the event was changed this year but the event was still the Jorg Bruder Finn Silver Cup. It attracted 35 young sailors from 14 nations.

One of the reasons to hold the championship in Aarhus was to give the sailors a first experience of the racing area where many will be competing at the 2018 Sailing World Championships the first qualifier for the Tokyo 2020 Olympics.

**Day 1:** The first day on the water was grey and wet with big shifts. Kasüske took the early lead from Max Kohlhoff and Lars Johan Brodtkorb, each taking a win in the three races. After Brodtkorb led the opening race from start to finish, he almost won the second race as well, overtaking early leader Emil Bengtson on the second upwind. Brodtkorb and Kasueske found a big left shift to pass him at the top and then split gybes downwind. Kasueske took the win by less than a boatlength. Kohlhoff dominated the third race, only really threatened in the closing stages as Cameron Tweedle closed the gap, but he couldn't find a way past.

**Day 2:** The fleet put on a spectacular show of physicality and cool sailing with three more races in winds gusting 25 knots. After discarding a UFD from day 1, Nenad Bugarin took the lead while Kohlhoff enjoyed the power sailing day to remain in second. Kasüske struggled and dropped to third. Bugarin won the first two races almost unopposed, leading from the first mark all the way round. Kohlhoff also revelled in the windy conditions to post two comfortable second places. The last

race belonged to Facundo Olezza the only sailor present who would sail in Rio just four weeks later.

**Day 3:** Bugarin continued his superb form the following day

with three bullets in the shifty and puffy conditions to take an 11-point lead at the top. Kasüske moved back to second after a consistent day while defending champion Ondra Tepy moved up to third. With free pumping on all the downwind legs, Bugarin showed exceptional speed and the ability to always find the right shift and the right side of the course upwind. Facundo Olezza was also impressive while Kasueske had trouble on the first upwinds, but good downwind speed and clever sailing got him back into contention each time.

**Day 4:** The dramatic fourth day changed the landscape with Tepy taking the lead for the first time, and Kasüske and Olezza not far behind. There is always one day at any regatta that ultimately decides the final outcome, and that day was Friday. After false start and a wait ashore, the fleet finally got away late in the day in wet and dismal conditions. Kohlhoff had the best day by far on the water, but the worst day in the protest room. He came off the water having secured a 1, 2, but ended the day with two DSQs. He led the first race of the day all the way round, but a top mark incident with Olezza later cost him the win in the protest room.



In the second race he was one of 11 boats disqualified for missing out the spreader mark at the top of the second upwind. Most didn't see it, some just followed the boats in front. First to spot the mistake was Hector Simpson who sailed back and ended up taking the race win after crossing the line in 12th.

One of the main casualties of the mistake was Bugarin who now had to count a letter score, which effectively ended his challenge for the title.

**Day 5:** With two races on the final day, and only three points separating the top three, it was still wide open. Tepy started the day well by leading round the top mark in race 12, and then holding the lead until half way up the second upwind. Kasüske then went further to



2016 U23 FINN WORLD CHAMPIONSHIP - FINN SILVER CUP

1	GER 259	Phillip Kasüske	4	1	3	6	11	5	4	3	4	6	(dsq)	1	5	53	
2	CZE 5	Ondrej Tepy	3	8	10	4	5	2	3	6	2	2	(dsq)	2	9	56	
3	ARG 4	Facundo Olezza	10	6	7	3	8	1	2	4	6	1	(ret)	13	6	67	
4	CRO 52	Nenad Bugarin	2	9	(ufd)	1	1	3	1	1	1	7	dsq	3	7	72	
5	RUS 6	Arkadiy Kistanov	14	3	(ret)	9	4	4	5	2	3	3	dsq	5	3	91	
6	GBR 96	Hector Simpson	8	(ufd)	11	7	12	12	6	11	11	4	1	8	2	93	
7	GER 25	Max Kohlhoff	7	5	1	2	2	7	14	7	5	(dsq)	dsq	22	1	109	
8	GBR 71	Henry Wetherell	12	17	6	15	3	6	17	9	7	11	(dsq)	6	12	121	
9	POL 16	Mikolaj Lahn	13	11	20	11	7	9	9	8	13	(21)	5	10	17	133	
10	DEN 24	André Højten Christiansen	9	7	18	5	10	8	13	10	22	5	(dsq)	20	11	138	
11	FIN 8	Oskari Muhonen	11	16	21	(26)	13	11	11	16	9	17	4	4	10	143	
12	NOR 9	Lars Johan Brodtkorb	1	2	14	19	22	(29)	12	17	10	10	14	rdg	rdg	148.2	
13	GER 595	Simon Gorgels	(20)	15	15	8	19	14	8	12	12	15	8	17	8	151	
14	IRL 4	Oisin Mcclelland	21	(25)	16	16	6	13	10	15	14	14	10	9	18	162	
15	RUS 73	Evgenii Deev	22	26	22	24	9	10	15	5	8	12	(dsq)	11	4	168	
16	SWE 5	Emil Bengtson	19	4	9	20	17	(27)	16	19	23	8	2	16	25	178	
17	DEN 5	Jacob Stachelhaus	(30)	24	17	13	15	18	7	14	15	19	3	19	19	183	
18	AUS 32	Jock Calvert	5	13	8	10	25	25	(33)	18	24	23	9	12	15	187	
19	GBR 98	Cameron Tweedle	18	19	2	14	20	20	(23)	22	20	13	17	15	16	196	
20	POL 116	Sebastian Kalafarski	16	12	4	22	14	23	26	(27)	18	16	7	21	24	203	
21	SWE 11	Johannes Pettersson	6	23	24	12	16	21	18	23	29	22	6	(33)	13	213	
22	RUS 2	Evgenii Bugaevskii	25	18	5	18	23	15	22	20	16	9	(dsq)	24	20	215	
23	ITA 83	Matteo Savio	28	14	25	21	21	16	19	13	17	24	(dsq)	7	14	219	
24	GBR 707	Callum Dixon	(29)	20	19	17	18	17	21	24	21	25	19	18	22	241	
25	GBR 703	Markus Bettum	15	33	29	(dnf)	26	26	30	21	dsq	18	12	14	21	281	
26	GER 142	Fabian Kasüske	27	10	12	28	27	30	20	(32)	30	32	13	25	28	282	
27	GBR 619	Matthew Stephens	17	(ufd)	28	23	30	24	25	25	28	20	22	23	26	291	
28	POL 11	Kacper Jarocki	(31)	29	23	25	31	28	27	28	19	29	11	30	29	309	
29	SLO 99	Jan Orel	34	21	(ret)	27	28	22	24	29	27	28	21	29	23	313	
30	POL 52	Krzysztof Stromski	23	32	13	29	29	(33)	29	30	32	27	16	28	30	318	
31	AUS 10	Marcus Whitley	32	31	30	(dnf)	24	19	31	26	26	26	15	26	32	318	
32	POL 100	Robert Jarocki	26	27	27	30	(32)	31	32	31	25	31	20	31	27	338	
33	ITA 53	Leopold Starke	(33)	30	31	31	33	32	28	33	31	30	18	27	31	355	
34	GBR 644	Joe Stocker	35	28	32	(dnf)	dnc	dnc	dnc	34	34	33	33	23	32	33	389
35	DEN 31	Tobias Hemdorff	24	22	26	(dnc)	dnc	dnc	dnc	dnc	dnc	dnc	dnc	dnc	dnc	396	

the left and found a way past to lead round the top and down to the finish. Tepy crossed second to maintain a one point lead overall. With Olezza down in 13th, the title had come down to Tepy and Kasüske.

In the decisive final race, a huge left shift on the first beat left the leaders reaching into the top mark, with Simpson and Kohlhoff ahead. A mistake from Tepy let slip Kasüske ahead and he was up to fifth at the gate with Tepy in 12th. It all looked to be over, but then Kasüske let Tepy escape on the final upwind while he went almost all the way left. They rounded the final top mark in eighth and ninth. The race to the finish was on and whoever finished in front was going to be World Champion. Kasüske had been fast downwind all week and the final leg was no exception. He passed three boats to move up to fifth and win the title, while his teammate Kohlhoff passed Simpson to take the win. Tepy crossed ninth to take silver, while sixth place for Olezza was enough for the bronze.

So Phillip Kasüske lifted the U23 Finn World Championship for the Jorg Bruder Finn Silver Cup after a thrilling final day in Aarhus. Last year's champion Ondrej Tepy almost did enough but had to settle for silver, while Facundo Olezza won the

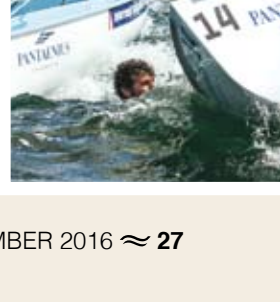
bronze, just before heading to Rio for the Olympics.

Olezza, said, "My goal this week was just to sail my best and to polish some little things before heading to Rio and this regatta was very good for that. It's also good for me to train with all these guys that are going really fast. The level in the Finn juniors is going up all the time. It's really tough to be there."

Tepy was happy with the silver but rued his missed chances. "Generally I am happy with the week, happy with the second place. It was very tough day today, especially mentally, as there were just three points between all the medal positions. The last race was the decider. I had a good start but then I made one mistake on the upwind. I missed one gust and that actually decided it."

Kasueske paid credit to his team and his coach. "We started Finn sailing three years ago with Per [Baggøe] as coach, and the goal was always Tokyo 2020. We didn't expect to get that close to qualify for Rio, but in the end it doesn't matter because we were always aiming for Tokyo. Right now we are on a really good way to do that. We have put in a lot of effort in the last three years and this year it has paid off for me. I did a really good world championship, so I am really happy with my season. And I am looking forward to the next years, always trying to get better."

Many of the sailors racing this week plan to return to Aarhus over the coming years to train and prepare for the 2018 Sailing World Championships, to try and qualify for the 2020 Tokyo Olympic Games. The 2016 U23 Finn World Championship was a fantastic start to that preparation for qualification, and perhaps, Tokyo gold. ≈





## The next generation ● Tokyo dreams

**W**ith the conclusion of the Rio 2016 Olympic Games, so the younger generation are already looking ahead to the next Olympiad as they await their chance to play on the biggest sporting stage in the world.

Here we look at a selection of the likely hopefuls for Tokyo 2020. Many have already been training for years to achieve their dream of sailing at the Olympics in the Finn class. Some narrowly missed selection for Rio, while some could be considered favourites to both qualify, and aim for a medal, in Tokyo. All are fully committed to the

challenge that the next four years will bring. Some will fill the sailing boots of retiring sailors, while others will be pitted against the current class stars to win the right to sail in Tokyo.

But this small selection also reflects a much larger group of tall, heavy and strong young sailors for whom the Finn remains the only chance they have to sail at the Olympic Games. The road will be long and hard, and in four years time we will be able to see how many of these young hopefuls will have achieved their goal of sailing in Tokyo. ≈



### Facundo Olezza • ARGENTINA

Age: 21  
Weight: 91 kg  
Height: 1.87 m

Facundo Olezza is a product of the Dinghy Academy in Valencia, and was the youngest sailor in the Finn fleet at the 2016 Olympics. Tipped by many as having medal prospects in 2020, he showed clear potential in Rio. To make the medal race was a huge achievement in itself, but to win two races along the way shows an unbridled talent that will surely rear its head again in the not too distant future.



### Jock Calvert • AUSTRALIA

Age: 18  
Weight: 90 kg  
Height: 1.94 m

“The Finn appeals to me because it’s a boat that rewards you for effort. It goes fast when you go hard. I love the close racing and feeling of power. The Finn was also pretty much my only option. It’s a big ask, but in four years I’d love to be able to be battling Jake Lilley and all the other top Aussie guys for selections to the Tokyo Games.”



## Rockal Evans • BERMUDA

Age: 28  
Weight: 104 kg  
Height: 2.00 m

Rockal Evans is hoping to follow in his grandfather's footsteps and qualify for the 2020 Olympics. His grandfather, Howard Lee, represented Bermuda in the Finn in 1976 and Evans is using the same sail number. Evans may have the only Finn in Bermuda, but he has high ambitions to improve and already won his his regatta, the Toilet Bowl in the USA. His campaign got started when local businesses funded and supported the purchase of his equipment.



## Nenad Bugarin • CROATIA

Age: 23  
Weight: 95 kg  
Height: 1.85 m

Narrowly missing out on claiming the U23 World title in 2016 following a silver medal in 2015, Nenad Bugarin is a definite talent for the future, showing a tactical and strategic ability to rival the best sailors in the class. He moved into the Finn class in 2014 and is now looking to capitalise on his experience of training alongside triple Olympian Ivan Kljakovic Gaspic in the run-up to Rio.



## Ondrej Tepy • CZECH REPUBLIC

Age: 21  
Weight: 95 kg  
Height: 1.91 m

Ondrej Tepy has been sailing the Finn for four years and he narrowly missed selection for Rio after making rapid improvements over the previous year including claiming the Junior World Title in 2015. He placed a close second at the 2016 U23 World Championship. Coached by his father he is one of best sailors in the new generation leading the challenge to compete at the Tokyo Games.



## Andre Højen Christiansen • DENMARK

Age: 23  
Weight: 95 kg  
Height: 1.88 m

"I think that Finn sailing is very cool right now, and the physical part of Finn sailing is very nice. And now the boys are getting much more athletic it just gives even more of the tactical stuff to the boat because you can concentrate more on that when you are in good physical shape....my plan right now is to put a lot of effort into it until 2018, and then I will see and take a decision from there."



## Hector Simpson • GREAT BRITAIN

Age: 21  
Weight: 93 kg  
Height: 1.97 m

"The Finn is the only Olympic class that I can be competitive in at my weight. I think I knew as soon as I came into the Laser standard that the Finn would probably be the boat I would end up in due to my size. I also like how the racing is extremely tactical. I hope to go full time to train for 2020." In four year's time, he hopes to be "competing in Tokyo for an Olympic medal."



## Phillip Kasüske • GERMANY

Age: 21  
Weight: 99 kg  
Height: 1.92 m

Kasüske was U23 World Champion in 2016 and 10th at the Finn Gold Cup. “We started Finn sailing three years ago, and the goal was always to go for Tokyo 2020. We didn’t expect to get that close to qualify for Rio, and we didn’t manage to pull that off, but in the end it doesn’t matter because we always were always aiming for Tokyo. Right now we are on a really good way to do that.”



## Max Kohlhoff • GERMANY

Age: 23  
Weight: 95 kg  
Height: 1.92 m

One of the rising stars of the Finn fleet, Max Kohlhoff has been sailing Finns for three years in a German funded development programme that has improved the level of a group of keen young sailors to the point where they are regularly challenging the front of senior fleets. Kohlhoff is a tough competitor and, apart from some unforced errors, would probably have made the podium at the 2016 U23 Worlds.



## Ahmad Ahmadi • IRAN

Age: 25  
Weight: 89 kg  
Height: 1.78 m

“The Finn is an awesome boat and a great class because I can use my strength and power in the boat, combined with tactics. I have already started campaigning towards Tokyo even before Rio started because I’m hungry for the five rings and I see a bright future in the Finn for myself. I am enjoying how I can sail fast in the Finn and am looking forward to make history for first time for my nation in the near future.”



## Oisín McClelland • IRELAND

Age: 22  
Weight: 101 kg  
Height: 1.98 m

“It always looked to me to be the boat I’d fit into because at my height I wouldn’t be the right weight for the Laser, and also the physicality of the boat was always an attraction. The guys at the top are some of the fittest athletes about and that’s really good motivation for those of us coming through. It’s cool to watch them and race against them. Obviously the goal is to get to Tokyo.”



## Arkadiy Kistanov • RUSSIA

Age: 22  
Weight: 94 kg  
Height: 1.88 m

Arkadiy Kistanov has been sailing in the Finn class for five years after first winning the Junior World Championship at his home club in Moscow in 2011 at the age of 17. Against strong opposition he has not reclaimed what is now the U23 Worlds, but did win the Junior Europeans in 2015 with a top 10 placing in the senior fleet. He narrowly missed qualification for Rio but should be a serious contender for Tokyo.



## Jan Orel • SLOVENIA

Age: 20  
Weight: 92 kg  
Height: 1.93 m

Jan loves the "...enormous physical and mentally demanding part" of Finn sailing but also found a very friendly welcome in the class, especially, "...the sailors and their fun and good-willed personalities, I absolutely adore. I feel good amongst these nice people. I don't have dreams, I have goals and Tokyo is definitely one of them."



## Johannes Pettersen • SWEDEN

Age: 19  
Weight: 91 kg  
Height: 1.94 m

Johannes got into the Finn, "...because of my size and because I think it's a nice and challenging boat to sail, and of course a fun boat. The Swedish Finn Association and some other Finn sailors helped and introduced me to the Finn. After that I got hooked and bought a boat. In four years time I hope to be qualifying, or qualified, for the Olympic Games in Tokyo."



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## AUSTRALIA



Chris Juttner writes: I've just finished my first season in the Finn class at Adelaide Sailing Club. It was amongst the best sailing I've had in the last 58 seasons.

I first thought about the class four years ago and sailed Neville Wild's boat in 10-16 knots. The boat felt fantastic and went so sweetly through the water. I was immediately aware of the power of the boat, my advanced age, how weak and

unfit I was and the fact that at 84kg I was about 15kg less than the ideal weight.

So I bought a new Sabre, a locally popular but underpowered singlehander, and enjoyed it for a bit. Then I tried the Finn again, this time Nick Paterson's with Neville out there to race against. It was 4-8 knots; the boat again felt superb, and Neville sandbagged to pretend I could beat him, which I seemed to be able to do until the breeze got up to 12 knots.

So I was hooked and started thinking about it seriously, reading lots about the class. Eventually I bought Nick's 15 year old Devoti and renamed it 'First Dog on the Moon' after my favourite political cartoonist in the Guardian online. I sailed as much as possible through last winter and during the ASC Hot-up series. I went out at Goolwa in the River Murray delta in stronger winds and practised gybing (without capsizing) and found everyone was very welcoming and helpful.

I also found that the boat was easier

to handle than I expected, surprisingly stable and responsive. I survived a club race in 24-28 knots and was really amazed I could sail to windward in that wind strength. But bearing off onto a dead run was challenging. I went into the Adelaide Nationals with the aim of finishing every race and hoping not to be last overall. It was light throughout. I did finish every race and I was not last in any race or overall.

I have really loved sailing the boat. Even when I'm last it is still such a sweet boat to sail. I think it's because the hull shape is perfect for our wave patterns and it never pounds, just slides through the water, the sail is powerful enough to make sailing really pleasant even in light winds but the rig adjusts so well to increasing strength. The technological elements of the Finn are a constant source of interest: this is a class with the rig potential to apply all the stuff you've ever learnt. ≈

## FRANCE



### French Open National 2016

Marc Allain des Beauvais writes: The French Open, with 55 sailors from seven nations, took place on Biscarosse exactly where in the 1930s Latécoère was building and launching big hydroplanes. Certainly this place is one of the most pleasant a Finnist can dream of, with space, large close parking, a wonderful, perfectly maintained, lawn to park boats and straight concrete access to the lake.

The 2016 French Open National was organised by Gilles Margerat and 20 volunteers sponsored by Eiffage and Clark Energie, two companies involved into regional electricity production, Biscarosse County Council and Cognac Godet, always much appreciated by everybody.

For the two first days Laurent Hay definitely ruled the fleet, with a 20 point lead over Marc Allain des Beauvais.

On the third and fourth days, the Race Committee sent the fleet to the southern part of the lake in the middle



of oil derricks. It looked like Dallas in Aquitaine with nice winds and good gusts. Mickael Hyrylainen as well Victor Gorostegui caught back up, winning a couple of races each.

When you are organising a five-day competition in summer, it's sure there will be one day off because of the weather. Not in Biscarosse where the 8-15 knots breeze always provides good conditions and allowed us to sail 12 nice races after four days and medal races for the last one. Indeed French IFA had decided that everybody would race a medal race depending his age except the top ten that would have a second one to compete for the scratch.

As a result on this fifth day,

everybody went out and proudly sailed a medal race, except the Legends who said they had enough as the wind was supposed to be strong. The scratch main event of the scratch medal race, won by Brendan MacCarty, but Laurent Hay controlled Micki Hyrylainen from some minutes before the start to the end of the race.

A wonderful prizegiving was held under Aquitaine sun, where everybody got a traditional black 'beret landais' and swore to be more numerous next year for the 2017 French Open National. ≈

1	FRA 75	Laurent Hay	42
2	FIN 225	Mikael Hyrylainen	56
3	ESP 57	Victor Gorostegui Arce	59
4	FRA 99	Marc Allain d. Beauvais	68
5	NZL 64	Brendan Maccarty	75
6	FRA 89	Benjamin Montagut	82
7	AUS 22	Paul Mckenzie	102
8	FRA 18	Frederic Tarnowski	118
9	FRA 28	Sebastien Grall	128
10	FRA 2	Damien Boulan	140

# Finn races around the world





## ITALY



### Malcesine International Finn Cup

Marco Buglielli writes: 34 Finns from six countries participated in the traditional International Finn Cup - Andrea Menoni Trophy which took place in Malcesine on Lake Garda at the beginning of October. Six nice races were sailed with the Ora (Garda southern wind) blowing from 10 to 14 knots, with the Oscar flag flying on most of the runs for free pumping. Enrico Voltolini dominated the series with four bullets and a third place, discarding a dsq in the second race where he had crossed the line in first.

1	ITA 66	Enrico Voltolini	7
2	RUS 73	Vladimir Krutskikh	16
3	CZE 1	Michael Maier	19
4	NED 972	Tobias Kirschbaum	20
5	ITA 123	Filippo Baldassari	21
6	CZE 3	Rudolf Lidarik	28
7	ITA 40	Marko Kolic	29
8	ITA 202	Giacomo Giovanelli	38
9	SLO 99	Jan Orel	39
10	ITA 115	Roberto Strappati	41



### Coppa Italia 2016

After the summer break Coppa Italia, the Italian major Finn Trophy, had its final events in Fano and Malcesine. Five races were sailed in Fano in light winds and six more at the International Finn Cup in Malcesine. Fano event was won by Filippo Baldassari and Malcesine by Enrico Voltolini, both athletes of Italian Olympic team.

But the fight for Coppa Italia trophy was all between Giacomo Giovanelli (third at 2015 Finn World Masters) and Roberto Strappati, who started sailing the Finn just one year ago and was immediately at ease in the boat. Coming to Malcesine they were just one point apart, with Roberto leading. They fought hard but in a fair and correct way and at the end Roberto maintained the one point margin and managed to conquer the Coppa Italia at his first attempt. Overall 24 races were sailed over six weekends (Anzio, Castiglione della Pescaia, Caldaro, Viareggio, Fano and Malcesine), with very good conditions and only a few races missed. 94 Italian competitors participated, plus



several foreign Finns from all over the world. Coppa Italia is supported by a pool of sponsors which offer their products for the final prizegiving: KevLove Bags, Grappa Bertagnolli, Quantum Sail Design Group, 3FL Saildesign, HitechSailing.com, Gill-Tomasoni Fittings, Bertacca Sail Equipment, Essemarine, Residence Ca' del Lago, Azienda agricola Valpanera, Hotel Piccolo Malcesine. ≈

1	ITA 115	Roberto Strappati	669
2	ITA 202	Giacomo Giovanelli	668
3	ITA 40	Marko Kolic	621
4	ITA 191	Alessandro Cattaneo	589
5	ITA 2	Marco Buglielli	549
6	ITA 234	Tommaso Ronconi	549
7	ITA 872	Nicola Menoni	520
8	ITA 4	Francesco Faggiani	515
9	ITA 114	Roberto Benedetti	491
10	ITA 920	Alberto Romano	458



## GERMANY



### International German Championship

Uli Breuer writes: Already a few days earlier the wind forecast predicted light winds in the area of Lake Chiemsee in Bavaria. And so the high 'Otto' brought mainly sunshine and only a light breeze from time to time. But still the Seebrucker Regatta Verein could say a warm 'hello' to 91 participants coming from five nations. And so the host tried everything to carry out a unique championship.

With an outstanding organization and with uncomplicated and smooth



processes the SRV cared for the sailors. Hospitality and an attentive, engaged race committee created a masterly atmosphere. This included sailing in the evening sun as well as leaving the port in the early morning. The time in between was filled with delicious catering, small talk, boat-care, playing chess and other meaningful activities.

On Sunday Otto passed by. The light breeze was accompanied by rain showers, now. In the final result Phillip Kasüske was the winner of the competition in front of Max Kohlhoff and Ondrej Tepy. I was able to win the last race of three and managed to finish fourth. ≈

1	GER 259	Phillip Kasüske	12
2	GER 25	Max Kohlhoff	17
3	CZE5	Ondrej Tepy	32
4	GER707	Uli Breuer	33
5	GER251	Mark-Raimondo Bayer	34
6	GER 8	Jürgen Eiermann	39
7	GER 960	Klaus Antrecht	44
8	SUI 13	Peter Kilchenmann	45
9	GER 713	Lars Haverland	55
10	GER277	Bernd Rimmele	55

## GREAT BRITAIN



### British Nationals 2016

Ben Cornish won his second UK title over three days at Christchurch Sailing Club on August 5-7. In the huge 59-boat fleet the British U23 squad figured highly with five in the top 10. ≈

1	GBR 91	Ben Cornish	9
2	GBR 29	Peter McCoy	14
3	GBR 96	Hector Simpson	16
4	GBR 71	Henry Wetherell	16
5	GBR 707	Callum Dixon	31
6	GBR 98	Cameron Tweedle	42
7	GBR 703	Markus Bettum	51
8	GBR 2	Allen Burrell	52
9	GBR 635	Simon Percival	54
10	FRA 99	Marc Allain de Beauvais	57





The writer, Nicholas Heiner was Laser World Champion in 2014. Nicholas is son of Roy & Mary Heiner. Roy won a bronze medalist in the Finn in 1996. Nicholas started sailing Finn this summer. After many years Roy is joining the Dutch Finn fleet again...



### Dutch Finn Nationals by the Rookie

For sure my upbringing in sailing was a bit biased towards the Finn with my old man sailing it during two Olympic cycles. No surprise I loved to watch the Finns race on the International circuit. Not

only for the boat itself but also mainly for the brute physical power you can put into the boat, and really push the boat to its maximum performance instead of pushing as hard as you estimate that the jury will allow you to.

With a few bits of training here and there I signed up for the Dutch National Championships held over three days in Medemblik. A great fleet of 57 boats from four countries signed up. The only one unfortunately missing was our Finn pride Pieter-Jan Postma. We will give him a rain check... It turned out to be an event with some good battles for the overall championship.

And with some competition within the competition it was all on. I mean you can't lose from your father right? And pretty sure it was vice versa.

The first day started with an offshore breeze from about 10 -16knots. For sure upwind I still had a bit on speed wise but managed to play the shifts well and with the laser technique still in place I managed to always pull away on the downwinds. A great start with three bullets, must be beginners luck right?!

Only it turned out that in the other races it wasn't much different, crossing all seven races in first. But the rookie in me got the better of me on day two and I managed to get two BFDs, title gone but luckily still in front of my dad, Roy

Heiner. Nevertheless what an amazing weekend it was with the highlight on Sunday. Champagne sailing with great waves and a 12-15 knot wind, it was all go for the title between five guys. After a great battle Hein van Egmond managed to pull his first Dutch title towards him over young Swede Johannes Pettersson, with our well known Dutch master Karel van Hellemond in third.

All I can say is what a great experience on my first Finn event. And yes, a few questions have been answered for me: The Finn is a real man's boat, it will put a smile on your face and you will come back for more; the pumping flag means the jury can resist themselves from waving their yellow flag; and Finn sailors, especially the Masters, have the best stories after a day of racing; and never get 10th because you will get the writer's prize.

1	NED 841	Hein van Egmond	30
2	SWE 14	Johannes Pettersson	32
3	NED 41	Karel van Hellemond (M)	41
4	NED 787	Nanno Schuttrups	47
5	NED 81	Douwe Broekens	49
6	NED 121	Martijn Van Muyden (M)	49
7	NED 972	Tobias Kirschbaum	50
8	NED 94	Tijmen van Rootselaar	59
9	NED 25	Gert van der Heijden	60
10	NED 842	Nicholas Heiner	66
11	NED 927	Roy Heiner	76

### Randmeer Race & Finn Club Holland 55th Anniversary

On 3 and 4 September WV Randmeer hosted the annual Randmeer Race. This year the race was also combined with the 55th anniversary of Finn Club Holland.

Arjan Vos writes: Some 60 boats were present, including a number of Germans and Belgians. On Saturday the weather was beautiful with a south-westerly wind of 6-10 knots and lots of sunshine. The wind was shifty and varying in strength, leading to general recalls in each of the three races sailed. The committee, led by Ruurd Baerends did a terrific job, so it was great sailing in the sunshine. However, the last downwind of the last race of the day the Oscar flag was up, unfortunately the wind dropped completely right after the first boats rounded the upwind mark. So most sailors ended the day with lots of sweat



but little additional speed. And luckily, this year the typical Randmeer seaweed was almost completely absent during the weekend, meaning little diversion from racing (i.e. hanging over the stern and grabbing for weed on the rudder). Karel van Hellemond ended the day with three race wins, before Ronald Ruitter and former Olympic bronze medalist Roy Heiner (right: who is now sailing again in the Finn together with his son Nicholas).

After the races, a BBQ with plenty of meat and beer was organised on the beach. Also a live cover band was present, even getting some help later in the evening from a Dutch Finn sailor renowned for his musical skills.

Sunday promised big winds with a forecast of 18-20 knots south-westerly gusting up to 27 knots. The day proved to be challenging, with winds varying between 10 knots and well over 30 knots in one rain storm that came over the fleet, just after the start of race 2. The Randmeer race is held on an inshore lake, nevertheless there were fantastic planing and surfing conditions in the long lasting gusts. This also meant a number of sailors went on multiple swimming expeditions and the fleet got a little bit smaller at the start of each race. Again,



Karel van Hellemond proved to be the strongest sailor with three race wins.

During the prizegiving ceremony, PJ Postma presented the prizes to the winners. In addition, he shared his story of the 2016 Olympics in Rio in a very impressive way. Thanks to the organisation of WV Randmeer for a perfect sailing weekend. ≈

1	NED 41	Karel van Hellemond	5
2	NED 972	Tobias Kirschbaum	18
3	GER 700	Martin Hofmann	24
4	NED 67	Ronald Ruitter	25
5	NED 29	Bas de Waal	39
6	NED 40	Peter Aukema	40
7	NED 69	Jelte Baerends	42
8	NED 7	Cees Scheurwater	48
9	NED 111	Chris Frijdal	54
10	NED 995	Arjan Vos	58

# RUSSIA

## 2016 Open Russian

Vasily Kravchenko writes: In the last week of August 66 sailors from 19 regions of Russia, but also from Estonia, UK and from Thailand came to Moscow to compete for the main prize of the traditional regatta "Open Russian" – the open championship of Russian Finn Association. 28 Russian juniors took part showing that Finn class remains strong and is growing. The youngest sailors were 15 years old, while the oldest was Victor Kozlov – 82 years old. The level of competition was quite high since many strong sailors, Olympians, prize-winners of international regattas, including stages of ISAF Sailing World Cup, Masters World Championships and Euro Cups were among participants. But besides them, quite many young talented new juniors came to the class.

The regatta had some very nice weather, which is usual for the end of August in Moscow with sun and wind from 8-15 knots. 12 fleet races and one medal race were carried without any problems or delays. But every race was very tricky for sailors due to many shifts and the lake conditions. The strongest wind arrived for the medal race, so the spectators could enjoy an amazing show from the top 10 sailors.

The main competition for the medals was among leaders of Russian national team – Team Fantastica - Arkadiy Kistanov, Egor Terpigorev and Vladimir Krutskikh. Egor Terpigorev was secure in third, while Arkadiy and Vladimir were fighting for the gold. Kistanov came to the medal race with an 11 points lead, but he was unlucky while Krutskikh won the race and finally took the Gold.

Kistanov was top junior, while Krutskikh also took the main prize in the Masters. Felix Denikaev was first among Grand Masters, while Yuri Polovinkin won the Grand-Grand-Masters.

We have to note that one young lady – Anita Borkova who took part in the regatta and showed a very good level, competing in the middle of the fleet (41st) in such a brutal class and not easy conditions. She normally competes in Laser Radial, but loved the Finn class so much she is planning to participate in next year's Open Russian for sure.

The Open Russian was the final regatta of Andrey Balashov Cup, which is



devoted to the famous Russian Finn sailor who took two Olympic medals. The cup counts results of 24 events from 22 cities of Russia. This time 132 sailors took part in the Cup. Dmitriy Petrov won the Balashov Cup this year from Felix Denikaev and Alexander Kulyukin. Full results can be found at: [www.finnclass.ru](http://www.finnclass.ru)

1	RUS 73	Vladimir Krutskikh	39
2	RUS 6	Arkadiy Kistanov	40
3	RUS 57	Egor Terpigorev	46
4	RUS 111	Andrey Yanickiy	76
5	RUS 2	Aleksey Borisov	98
6	RUS 53	Evgeniy Bugaevskiy	110
7	RUS 12	Konstantin Lashuk	114
8	RUS 1	Aleksey Selivanov	118
9	RUS 41	Feliks Denikaev	123
10	RUS 11	Kirill Luzan	130

## International University Sailing Cup

The Russian Students Sailing League and Russian Finn Association held the 4th International University Sailing Cup in Moscow (August 15-23) at Moscow Sailing School, which hosted 2005 Finn Gold Cup and 2007, 2011 Finn Silver Cups. The competition took place in three classes: Finn, Snipe (mixed) and light weight single-handed dinghy "Luch" (a national Russian class). Students could get charter boats for Finn and Snipe for the competition. 53 students in total from 31 Universities took part in the regatta.



The toughest competition was in the Finn class with 23 competitors. The main part of the regatta was sailed in light winds, and the lake conditions gave good exercises in tactics for the sailors. After ten races, Arkadiy Kistanov (Moscow) led from the beginning and maintained his lead until the end. Evgeniy Deev (Sevastopol) was second with safe margin from the third, while Artyom Grishnyakov (Toliatti) was third from Artur Kotlyarov just by success in the last race. The next International University Sailing Cup is planned in Moscow in the middle of August 2017. All students are welcome. ≈



1	RUS 6	Arkadiy Kistanov	12
2	RUS 4	Evgeniy Deev	25
3	RUS 777	Artem Grishnyakov	29
4	RUS 2	Artur Kotlyarov	32
5	RUS 76	Sergey Platonov	49
6	RUS 73	Aleksey Kol'cov	51
7	RUS 27	Denis Kotlyarov	62
8	RUS 10	Aleksey Moskaev	62
9	RUS 88	Mihail Yatsun	64
10	RUS 11	Sheludyakov Vyacheslav	67





Erik Åberg tells the story of his season

**GKSS OCR, Gothenburg**

As the starting point of the regatta season the GKSS OCR was sailed on the first weekend in May. I knew that I had a chance for a good result, but I had to perform at my best. Gothenburg offered, as always, perfect conditions, even though the wind was light. I had a clear view of my tactics and I managed to climb into first place to win the first race. In the second race Max Salminen showed his skills and won from Per Friberg and myself. On day two, three races were sailed and all day the top rankings shifted between myself, Pluto, Friberg and Christian Finnsgård. Max was on his way to Rio for a training session and couldn't sail but it was very inspiring to meet him. Going into the medal race with a two-point lead, Pluto and I were fighting for victory. I got stuck in a dead calm, which gave Pluto the chance to take the victory. With a third in the medal race I was second in the regatta with the same score as Pluto who won.

**USS-regatta, Uppsala**

The forecast for the USS regatta, the birthplace of the Finn, looked very promising with strong winds on the first day and a bit lighter on the second. The entry list was much longer as the Masters had returned from Italy. I was looking forward to the races and of course aiming for first. During the first race the clouds were covering the sky with a wind of about 12-16 knots, which allowed free pumping on the downwind. After a tough battle between myself, Pluto and Pettersson, I managed a third. The winner was Johannes Pettersson who entered the class this year and has already shown great skills. All the races on the first day were almost the same and I ended up fourth. On Sunday the wind was a bit lighter and I struggled with finding the right way and started off with two eighth places. I managed a third in the last race to be fourth overall. Svante Collvin, Fredrik Tegnhed and Pluto got a bullet each. In the final standings Pluto moved up but didn't catch me. Pettersson took the victory with 13 points, nine points ahead of Miles, with Tegnhed third.

**Swedish Championships, Varberg**

New regatta, new opportunities. Strengthened by my performance I set my goal to be top five. With my barely 85 kilo of weight I've always struggled on the open sea but since I finished in fifth last year I thought I should be fifth or

better. I arrived in Varberg two days early and had some good training. Everything felt good and my self-confidence rose. On the first day the wind increased to 20-24 knots and I had a tough time. When we woke on Saturday the wind had increased even more: no racing. On Sunday Varberg showed great sailing conditions with sun, big waves and 16-20 knots. Björn Allansson continued his flawless series while I continued with a 14th. I kept on fighting but in these conditions I got two more 14th. Allansson kept on with his winning trend and took another two bullets to win the regatta and take his fifth Swedish title, more than any other Swedish Finn sailor. For myself I have to say that I was pleased with my result. I was 15th overall and eighth Swede. I knew it could be rough but I felt that I sailed as good as I could. Martin Pluto got 13th and heading towards the final regatta in the Swedish Cup there were only a few points between us.

1	SWE 6	Björn Allansson	4
2	SWE 11	Johannes Pettersson	14
3	GER 193	Thomas Schmid	17
4	NED 41	Karel von Hellemond	20
5	NED 881	Thierry Vierssen	24
6	DEN 231	Kenneth Bøggild	26
7	SWE 59	Lars Edwall	26
8	SWE 75	Johan Wijk	28
9	NED 780	Jan-Willem Kok	31
10	NOR 64	Petter Fjeld	37

**Sola Cup, Karlstad**

The Sola Cup has been a regatta where I previously have had difficulties. Even though it's held in my home waters, I have never been able to score. For sure it's fun to sail on the home waters but going into the regatta I had mixed feelings about it. The forecast for this year's event predicted 10-20 knots of wind on Saturday with light winds on



Sunday. In the first race I got along well and was battling for first place with Pettersson during the whole race. Free pumping and flat water makes the sailing very physical and I was sailing very well. The second race had the same characteristics, with myself and Pettersson at the top and Pluto right behind. The last race of the day gave me some problems on the left side but I managed to climb to fourth. On Sunday after three hours of waiting the first race started but I didn't find the rhythm. In the second race I managed to add a second place to my score closely behind Tegnhed and Pluto and in the last managed to climb to fourth. Worth mentioning is that Adam Svärd, who hadn't sailed a Finn for almost a year, was leading the race during the first two laps despite a broken outhaul on his Vanguard from the 1970s.

1	SWE 60	Martin Pluto	11
2	SWE 69	Erik Åberg	14
3	SWE 5	Fredrik Tegnhed	16
4	SWE 11	Johannes Pettersson	23
5	SWE 3	Christian Finnsgård	25
6	SWE 2	Svante Collvin	29
7	SWE 91	Pär Friberg	35
8	SWE 14	Stefan Nordström	36
9	SWE 8	Christoffer Finnsgård	38
10	SWE 99	David Berg	49

Congratulations to Martin Pluto who won the regatta. I must say that I'm very pleased with the result. Without the mistake in the first race I would have had



Clockwise from above: Björn Allansson, a happy winner of his 5th Swedish Championship • Björn Allansson sailing in Varberg prior to the Swedish Championships • Top three at the Swedish Championships, from left: Lars Edvall, Björn Allansson, Johannes Pettersson • Top four in the Swedish Cup 2016 from left: Stefan Nordström, Martin Pluto, Erik Åberg, Johannes Pettersson



the chance to win the regatta but that will be the task for next year. The result also meant that I managed to keep my first place in the total standings of the 2016 Swedish Cup. After a total of 23 races sailed throughout the season the difference between myself and Martin Pluto was just two points.

1	SWE 69	Erik Åberg	105
2	SWE 60	Martin Pluto	107
3	SWE 11	Johannes Pettersson	234
4	SWE 14	Stefan Nordström	296
5	SWE 2	Svante Collvin	318

Now there will be less sailing and more skiing during the winter here in Sweden, which will serve as my physical training heading towards the 2017 Finn season. And the goal is already set, to defend the Swedish Cup. ≈

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## SWITZERLAND +

**International Swiss Championship**  
Beat Steffen writes: 81 Finn sailors from seven nations battled for the International Swiss Championship from 23-26 of June on Lake Thun.



New to the Finn in a borrowed boat, Nils Theuninck of Gstaad Yacht Club took the title in impressive fashion ahead of Olympic sailor Michael Maier and local Christoph Burger.

The elite of Swiss Finn sailing as well as multiple top sailors from abroad participated in this international event organised by the Thunersee-Yachtclub. Humid air masses hindered the local thermal wind system and strong thunderstorms made it difficult for the race committee to get in four races for a valid championship. Thursday did not result in a race that could be counted. On Friday, three races were sailed in light conditions and beautiful sunshine.



With a 1, 2, 3, Nils Theuninck indicated that winning this championship would go through him. A fourth race was sailed on Saturday in medium conditions, again won by Theuninck. Thunderstorms prohibited any more racing on Saturday. Sunday was sunny, but windless.

Nils Theuninck, a young and upcoming sailor, took the championship in a very solid manner ahead of Michael Maier and Christoph Burger (left)

1	SUI 88	Nils Theuninck	7
2	CZE 1	Michael Maier	23
3	SUI 7	Christoph Burger	23
4	ITA 872	Nicola Menoni	35
5	SUI 5	Christoph Christen	31
6	SUI 27	Dominik Haitz	56
7	AUT 333	Gerhard Weinreich	52
8	SUI 83	Beat Steffen	71
9	CZE 318	Martin Plecity	72
10	SUI 86	Piet F Eckert	83

fleet into his shipyard for a memorable dinner. Unfortunately, the wind conditions prohibited a fantastic Finn weekend. Christoph Christen won a single race in marginal conditions ahead of light wind specialist Peter Kilchenmann and Christoph Burger (below). ≈

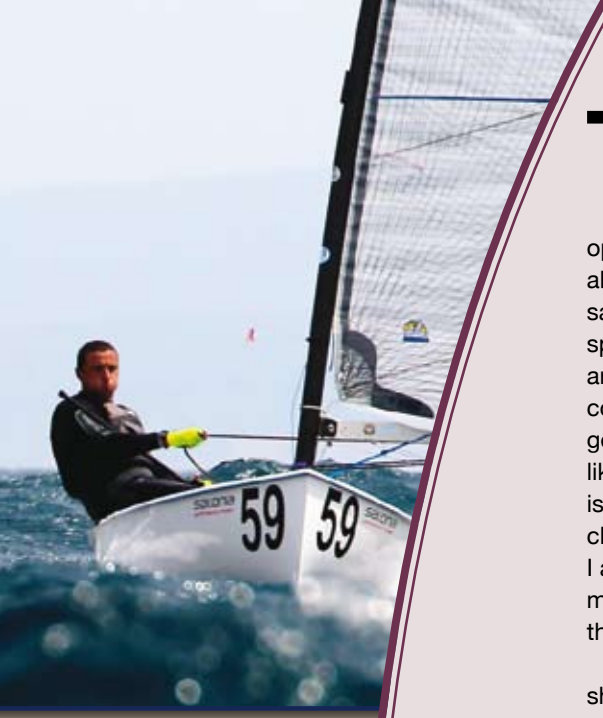
1	SUI 5	Christoph Christen	1
2	SUI 13	Peter Kilchenmann	2
3	SUI 7	Christoph Burger	3
4	SUI 3	Carlo Lazzari	4
5	SUI 94	Andreas Friderich	5
6	SUI 89	Lorenz Kurt	6
7	SUI 4	Jiri Huracek	7
8	FRA 50	Michel Baudin	8
9	SUI 58	Gérald Birbaum	9
10	SUI 27	Dominik Haitz	10

### Coupe de Lemman, Morges

24 Finn sailors travelled to Morges on Lake Geneva for the second edition of the Coupe de Lemman on September 3-4 organised by the Birbaum Family and Christoph Burger from North Sails.

Gerald Birbaum invited the entire





At the 2015 Finn European Championships in Split, Croatia, Luka Pezelj and a team of professors from the Faculty of Kinesiology in Split conducted detailed morphological measurements on most of the fleet. Here, Luka describes some of the findings from the U23 group of sailors which formed the basis of the first scientific paper. The original article can be downloaded from [www.researchgate.net/publication/308324885](http://www.researchgate.net/publication/308324885)



The fact that we can't predict or control the weather is convoluted enough but when we add unpredictable opponents on a race course, we have absolute chaos. This chaos makes sailing the most unpredictable Olympic sport. It is obvious that sailors who are able to maintain their speed in all conditions and are intelligent enough to get out of this chaos unharmed are more likely to win these chaotic regattas. But is there something measurable that can clarify the foundations of their speed (as I am not sure that sailing intelligence is measurable) and is it achievable for all the sailors who are not fast enough?

That is something that sport science should find the answer for. But the chaos that I mentioned before and science do not go well hand in hand. That is probably the main reason why sailing is so unexplored in sport sciences compared to the other more predictable and measurable sports, such as rowing or athletics. Actually there hasn't been any research that done on any major sailing championship in any Olympic class. The aim is not to glorify but rather to state how lucky we were to make the following research possible. I hope that the results of this article and the ones that follow will be valuable enough to thank the athletes, coaches and Finn class board for without them, this kind of research wouldn't be possible.

#### Morphological model

Defining the morphological model of an elite sailor in each Olympic class is crucial for all young athletes and their coaches as they have to decide which class is going to be the most suitable for each individual's own morphological characteristics once their biological growth is finished. Although longitudinal and transversal skeletal dimensions are genetically predetermined, the body mass and ratio between muscle and fat tissue is manageable. So the main

goal of this research was to define the morphological characteristics of an elite Finn sailor and eventually determine some differences between more and less successful sailors.

The week before the Finn European championship in Split in 2015, a team of professors from the Faculty of Kinesiology in Split conducted detailed morphological measurements of 60 athletes (Table 1). Among them were 18 athletes competing in the U23 category which this study is about.

Table 2 represents differences between more and less successful sailors. The more successful group of sailors are the ones who finished within the top 35 at the 2015 Finn championship. The group of less successful sailors were the ones that finished the regatta below the 35th position. The top 35 athletes represent half of the competitors. These sailors have the theoretical possibility to qualify for the Olympics (if Finn Europeans 2015 were an Olympic qualification event).

From Table 2 it is obvious that the more successful sailors are 6cm taller (statistically significant) and 3kg heavier. This is expected as body height and body mass will positively contribute to a sailor's leverage in maintaining the boat in the optimal position while hiking during close-hauled sailing. In this particular competition, this- effect was extremely valuable as 6 out of 9 races were held in "full hiking" and "free pumping" conditions (3 races from 12 to 15kts and 3 races from 15 to 25kts) and there were just 3 races in wind conditions up to 12kts.

The simple conclusion would be to gain more mass to become more competitive in stronger wind conditions as height is genetically determined. This conclusion is only partially true. However, there are numbers that reveal alternate means to achieving competitive advantages, especially when we consider body fat as a dysfunctional ballast.

# Morphological study of elite Finn sailors

## The goal was to define the morphological characteristics of an elite Finn sailor and determine differences between sailors

The more successful sailors had 2.94kg more total body mass but, on the hand, 1.75kg less fat mass than the less successful sailors. The more successful sailors, then, have an effective difference of 4.46kg of lean muscle mass than less successful sailors. If we conclude that more muscle mass means more muscle power then we can conclude that more successful sailors are STRONGER. If we can consider that body composition is changeable through long periods of medium and high intensity workouts it could be concluded that more successful sailors also have more ENDURANCE.



### Complex mosaic

Does this mean that one must be TALL, STRONG and ENDURANT to be successful in the Finn sailing class? After revealing just one small piece of this complex mosaic, it would be pretentious to conclude that Finn sailing is or is becoming more physical than it was a few decades ago. Even more pretentious would be to conclude that Finn sailors are the fittest on a sailing course, or even in all other sports. But just a little scientific evidence that physicality is or is becoming “*condicio sine qua non*” for achieving great results in the Finn class is a nice attainment. Would there be similar results of research if we include all sailors and not just the ones competing U23? Would there be similar results in different weather conditions? What are the differences between the top 10-20 and the rest of the competitors? Is this trend of making sailing in Finn more physical related with the implementation of the “free pumping” rule? Although answering those questions from a sport science perspective is a very slow process, it can’t be done without measuring all sailors in a most delicate moment, just before major events. ≈

Table 1 Descriptive statistics of morphological characteristics of U23 Finn sailors (N=18)

VARIABLE	M	SD	COEF. VAR.	D* (K-S)	MIN	MAX	SKEW	KURT
HEBOD	188.09	5.80	3.09	0.16	176.10	198.40	-0.05	0.11
HESIT	98.77	3.23	3.27	0.14	91.50	103.40	-0.33	-0.11
LL	89.32	3.71	4.16	0.14	81.70	96.00	-0.17	-0.41
KDIA	10.05	0.64	6.36	0.12	8.75	11.30	0.33	0.58
EDIA	7.20	0.48	6.61	0.11	6.35	8.15	0.01	-0.46
TBM	92.07	5.66	6.14	0.17	76.30	99.00	-1.45	2.38
FATM	12.04	4.01	33.35	0.10	5.70	19.20	0.16	-0.64
MM	76.36	5.16	6.76	0.15	64.10	85.40	-0.41	0.83
SUMSF	56.68	17.08	30.13	0.12	33.70	98.95	0.69	0.56
MUACIR	37.48	2.35	6.27	0.11	32.05	41.25	-0.25	0.36
FACIR	30.63	1.12	3.64	0.16	29.20	32.90	0.49	-0.62
CCIR	40.32	3.46	8.58	0.24	28.20	43.50	-2.68	9.22
SWIT	42.65	1.78	4.18	0.11	39.40	45.20	-0.22	-0.88
HWIT	29.06	2.81	9.67	0.17	20.60	32.60	-1.64	3.90
FATM%	13.01	4.02	30.87	0.10	6.50	19.80	-0.05	-0.58
BMI	26.06	1.76	6.77	0.13	23.17	30.25	0.70	0.79

Legend: M – arithmetic mean; SD – standard deviation; COEF.VAR. – coefficient of variance; D\* (K-S) – coefficient of the Kolmogorov-Smirnov test; MIN – minimum result; MAX – maximum result; SKEW – measure of distribution asymmetry; KURT – measure of distribution shape.

“The variable set measuring morphological characteristics included 16 morphological measures which are well known in scientific literature: Body height – HEBOD; Sitting height – HESIT; Leg length – LL; Knee diameter – KDIA; Elbow diameter – EDIA; Total body mass – TBM; Fat mass – FATM; Fat mass percentage – FATM%; Muscle mass – MM; Body Mass Index – BMI; the Sum of 4 skinfolds (triceps, back, abdominal and calf) – SUMSF; Mid-upper arm circumference – MUACIR; Forearm circumference – FACIR; Calf circumference – CCIR; Shoulder width – SWID; Hip width – HWID. Measurement of morphological characteristics were done according to the ISAK protocol (Stewart et al., 2011). Three measures of body mass (FATM, FATM% and MM) represent the algorithm calculation obtained by using the Body Composition Analyzer type MC-980MA, made by TANITA Europe B.V., Amsterdam, Netherlands.” \*copied from original paper

“U23 Finn sailors on average had: body height of 188.09±5.80 cm; 92.07±5.66 kg of body mass with 13.01±4.02% of fat mass; and body mass index of 26.06±1.76. The features of morphological characteristics of U23 Finn sailors presented in Table 1 can be compared to the findings of other authors. In comparison, sailors of national ranking in the Olympic Laser Standard class (N=8) and of approximately the same chronological age (22±4 years) have body height of 178±0.06 cm, body mass of 79±3 kg and body fat percentage of 10.5±4.1 (Vangelakoudi et al., 2007). Almost the same results were found in sailors of the same class in the study conducted by De Vito et al. (1996). The sailors were of national ranking (N=8), aged 23.2±3.1 years, with body height of 181±3 cm, body mass of 78.1±6.1kg, body fat percentage of 13.4±2.0 and Body mass index of 23.8±1.5.

By comparing basic morphological characteristics of U23 Finn sailors and their peers who compete in rowing at international level (N=79), aged 23.65±2.82 years, whose body height is 190.84±4.8 cm and body mass is 89.6±6.27 kg (Marinović, 2011), we can conclude that U23 Finn sailors are morphologically more similar to elite rowers than sailors in the Laser Standard class.” \*copied from original paper

Table 2 Differences in results of morphological characteristics of more successful and less successful groups of sailors

VARIABLE	MORE SUCCESSFUL (N - 7)		LESS SUCCESSFUL (N - 11)		t-value	p=
	M	SD	M	SD		
HEBOD	191.73	5.01	185.77	5.20	2.40*	0.03
HESIT	100.67	2.59	97.55	3.09	2.21*	0.04
LL	91.06	3.79	88.22	3.38	1.66	0.12
KDIA	9.79	0.37	10.21	0.73	-1.38	0.19
EDIA	7.04	0.32	7.30	0.54	-1.18	0.25
TBM	93.87	3.04	90.93	6.72	1.08	0.30
FATM	10.97	4.24	12.72	3.91	-0.89	0.38
MM	79.09	3.51	74.63	5.42	1.92	0.07
SUMSF	49.08	15.38	61.52	16.96	-1.57	0.14
MUACIR	37.84	2.45	37.26	2.38	0.50	0.63
FACIR	30.49	0.86	30.72	1.28	-0.43	0.67
CCIR	38.82	4.89	41.27	1.86	-1.52	0.15
SWIT	43.33	1.16	42.22	2.02	1.32	0.21
HWIT	28.77	3.88	29.25	2.07	-0.34	0.74
FATM%	11.61	4.33	13.90	3.73	-1.19	0.25
BMI	25.57	1.38	26.36	1.97	-0.92	0.37



Photo: Tomas Moya/Sofia

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