

# David Dellenbaugh's **SPEED & Smarts**™

The newsletter of how-to tips for racing sailors

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## Fill up your senses!

Like most good athletes, top sailors don't think too much about what they're doing. When the boat feels slow, they ease the mainsheet slightly, bear away a degree or two and take off! When the wind velocity changes, they move around a little and keep going fast. Basically, they make it look easy. Often they have a hard time explaining exactly what they did, or why. It just "felt right."

One of the toughest things about sailing, or any sport, is to learn how to "feel" better. This is not something you can study in a book – it requires time and experience on the water, plus a willingness to gather input using all of your senses. Here are a number of ways you can sharpen your sensitivity for the boat and, ultimately, improve your speed.

### Tune in to certain key variables

Think of yourself as the "brain" of your boat. You're connected to the boat via the wheel or tiller, the sheet you are holding and the hull where you are sitting.



JH Peterson photo

The last issue of *Speed & Smarts* was all about the nuts and bolts of rule 18 when you are approaching and rounding marks. This issue covers a much more abstract subject – the importance of 'feel' in getting your boat up to speed. Unlike mark roundings, there are no hard and fast rules about feeling what your boat needs. You just have to rely on your senses and your intuition. This is especially important when you haven't been racing or practicing for a few weeks, or even just a few days.

Each of these "nerves" gives you signals about how the boat is feeling. Your job is to recognize these signals and then interpret them so you know how to keep the boat sailing fast.

**Boatspeed.** One quality that separates top sailors from the rest is their ability to detect small increases or decreases in boatspeed. This is important because a tiny change in speed can make a huge difference in performance. Also, many trim choices depend on whether you are accelerating or decelerating.

It's not always easy to feel how fast you're going. On bigger boats, you can get speed information from your knotmeter, but remember these numbers

are lagging by several seconds. In most situations, you must rely on your own senses to judge speed.

The best way to do this is by tuning into as many different sources as you can – the feel of your bow punching through the waves, the sound of water hitting the boat, the feel of water flowing over the hull and rudder, the sight of water bubbles and waves flowing past your hull, and your internal sense of acceleration or deceleration.

**Tactics & STRATEGY**

**IQ TEST**

**60**  
questions  
to help you  
sail smarter!

**INSIDE**   
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## Sail by 'feel'

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## Fill up your senses (continued from page 1)

**Angle of heel.** Some sailors believe this is the single most important clue about a boat's performance. Visually, the best way to see your boat's heel angle is by looking at the relationship between your headstay and the horizon. If your boat is perfectly flat, this angle will be roughly 90°. The farther it is from 90°, the more you are heeled. This will also be apparent from your sense of balance.

It's helpful to know not only your current heel angle, but the tendency of the boat to heel more or less in the near future. This gives you a good idea of whether the boat is about to gain or lose power. The best way to gauge this is by feeling the pressure of the hull as it pushes up against your body or drops away from you. This firmness of the windward rail will indicate what's about to happen.

**Amount of helm.** The push or pull on your rudder is a very important key to the health (and therefore the speed) of your boat. The amount of helm you have affects the way you tune your rig, trim the

sails, adjust crew position, and almost everything else. Because of this, the person holding the wheel or tiller is a central player in the boatspeed process because he or she is the only person directly connected to the rudder.

There are several ways to gauge the amount of helm at any moment. The typical way is by feeling the amount of push or pull in your wheel or tiller. You can also let go of the helm for a moment and see what happens. Visually, look at how far your tiller (or the center mark on your wheel) is away from centerline when you are sailing closehauled.

**Sail trim.** The sails are your boat's engine, so it's very important to monitor closely how they are trimmed. Obviously you want to watch all your key trim indicators such as the angle of the top batten. By feeling how hard each sheet is pulling, you'll know how much power is in that sail at any moment. Upwind this will indicate whether you should trim tighter or looser. Downwind the spinnaker pressure tells you to head higher or lower.

**Wind and waves.** The wind may be more important than anything else on this list because it makes

your boat go. Though the wind is invisible, you can see its effects on the water and on other boats. You can feel it on your face and skin, and sense how much it makes the boat heel. You also hear different sounds when the wind increases; e.g. whistling in your rigging, and winches turning on other boats.

**Relative performance.** Another time when you must rely on your senses is when you are trying to sail fast near other boats. Watch those boats to see how your height and speed compare. Listen to their bow wave to determine whether they are getting closer or farther away. When your boat is relatively fast, tune in to the way it feels so you can duplicate this in the future.

There is a close relationship between all the sensations we've discussed here. For example, if you're closehauled and you sail into a lull, you will feel less wind pressure on your face and maybe even a shift in direction as your apparent wind moves forward. You will feel less pull in the mainsheet, the windward rail will start to fall away from you, and the tiller won't be pulling quite as hard as before. You may hear a change in water sounds as the boat slows down.

## Evaluate the feeling





How your boat feels is only the beginning of the story. Your real goal is not to achieve any particular feel – it's to make the boat go fast. Usually there is a close relationship between feel and speed (*see page 16*). In other words, when the boat feels good, it's probably going fast. That's why we try to set the boat up so it feels like it's easy to sail.

However, you must constantly check in with your real goal – speed! The best way to do this is by watching your performance against other boats. Are you going faster? Slower? Pointing higher? Lower?

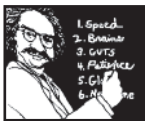
Your competitors are the ultimate measure of performance, so when you're going relatively fast, remember how your boat feels. If you do this many times over a wide range of conditions, you'll go faster and faster. •



The tug of the tiller, the pull of the spinnaker sheet, your angle of heel, the sound of water going by the hull . . . If you use *all* your senses, there are many ways to feel the pulse of your boat. Every piece of information helps you figure out what the boat needs to keep sailing fast.

 <p>Use your Senses!</p>	 <p><b>LOOK</b></p>	 <p><b>TOUCH</b></p>	 <p><b>LISTEN</b></p>
<p><b>Boatspeed</b></p>	<ul style="list-style-type: none"> <li>• Watch how fast the water bubbles and waves are flowing past the boat.</li> </ul>	<ul style="list-style-type: none"> <li>• Feel the sensation of water flowing over the hull.</li> <li>• Feel the rate at which the bow punches into the waves.</li> </ul>	<ul style="list-style-type: none"> <li>• Listen to the bow wave and the water flowing past the hull.</li> </ul>
<p><b>Angle of heel</b></p>	<ul style="list-style-type: none"> <li>• Look at the angle that your forestay or mast makes with the horizon.</li> </ul>	<ul style="list-style-type: none"> <li>• Use your sense of balance to feel your body's orientation relative to vertical.</li> <li>• Feel the windward side of the hull as it pushes up against you or falls away.</li> </ul>	
<p><b>Amount of helm</b></p>	<ul style="list-style-type: none"> <li>• Look at how far the tiller (or the center mark on your wheel) is away from the centerline of the boat.</li> </ul>	<ul style="list-style-type: none"> <li>• Feel how much the wheel or tiller is pulling (or pushing) on your hand/arm.</li> <li>• Feel what happens when you let go of the wheel or tiller.</li> </ul>	
<p><b>Sail trim</b></p>	<ul style="list-style-type: none"> <li>• Watch your key trim indicators such as: <ul style="list-style-type: none"> <li>- Angle of the top batten</li> <li>- Shape of the jib foot</li> <li>- Angle between spinnaker luff and pole</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Feel how much pressure is in the sheet of the sail you're trimming.</li> </ul>	<ul style="list-style-type: none"> <li>• Listen for sounds you should not be hearing – sail luffing, leech flapping, etc.</li> </ul>
<p><b>Wind &amp; Waves</b></p>	<ul style="list-style-type: none"> <li>• Look on the water ahead for puffs, lulls, shifts, waves and flat spots.</li> <li>• Watch other boats for effects of wind.</li> </ul>	<ul style="list-style-type: none"> <li>• Feel the strength of the wind on your face and skin.</li> <li>• Feel the wind by sensing how much it is making the boat heel.</li> </ul>	<ul style="list-style-type: none"> <li>• Listen to sounds usually associated with more wind velocity; e.g. trimming or easing on nearby boats</li> </ul>
<p><b>Relative performance</b></p>	<ul style="list-style-type: none"> <li>• Carefully observe your speed and height versus that of nearby boats.</li> </ul>	<ul style="list-style-type: none"> <li>• Notice how your boat feels when it is “in the groove” and going well relative to other boats.</li> </ul>	<ul style="list-style-type: none"> <li>• Listen to the bow wave of the boat to windward: Is it getting closer, farther away, moving forward or aft?</li> </ul>





## CHECKLIST

# Sensible tips for improving speed

Unless you are lucky enough to sail every day, there are a few things you should do before each race if you want to be fast. One of the most important is to regain and refine your sense of feel, which is critical for understanding what the boat needs. This is covered in depth on pages 2, 3, 6, 11 and 16.

Besides becoming “one” with your boat, there are many ways to streamline the process of getting up to speed. Fortunately, the science of boatspeed is not as mysterious nor as technical as many people think. Good boatspeed can be achieved by any sailor, regardless of his or her level of experience. And the best part is you don’t even have to understand sailing theory in order to go fast. You just need some common sense, good observational skills and a learning attitude. Here is a “tuning for speed” checklist:

**Practice a lot (if possible).** In order to be fast you must be smooth at boathandling, sail trim, changing gears, steering and much more. Those skills obviously cannot be perfected on your way out to the starting line, so try hard to find time when you and your teammates can go out practicing, ideally with another boat that wants to improve as much as you.

**Utilize existing resources.** When you’re trying to improve your speed, you don’t have to start from scratch. There’s a lot of information already available about how to go fast in almost any boat.

For one-designs, the best source of information is usually a sailmaker’s tuning guide (from your own sailmaker or others). Many of these are now online, which means they are easy to get, and they’re updated frequently. I recommend setting your boat up exactly like your sailmaker recommends, unless you are already very fast. Once you make this set-up work, you can try

changing things and experimenting.

Other people in your class or fleet can also be excellent resources on boatspeed. Most sailors love to be considered “experts,” and they are usually very willing to share what they know. All you have to do is ask! After every day of racing, make it your policy to invest some time talking with the top sailors (skippers and crews) about their secrets to going fast. If you do this consistently, you’ll be amazed at how much you will learn!

**Make sure your boat works.** It’s hard enough to go fast when your boat stays in one piece. But if something breaks, it can upset your entire rhythm and kill your speed. So treat breakdowns as your enemy.

Before the season starts, go over your boat with a fine-toothed comb. Check all the places where you have the highest chance of a breakdown: your boom vang, hiking straps, hiking stick universal, clevis and ring pins, running rigging, etc.

During the season, inspect these items before each regatta and then re-check them every race morning before you rig your boat. If you sail more than one race on a windy day, it’s not a bad idea to check some of these things between races. When it comes to breakdowns, you can’t be too careful or too prepared.

In order to prevent breakdowns, treat your boat with respect on the water. In heavy air, for example, don’t make any unnecessary jibes. When you’re vang sheeting, ease the vang before you bear off around the windward mark. If you need more genoa luff tension, don’t just grind the halyard up with the sail fully loaded. Never scull with your rudder, always rinse your fittings with fresh water, and never let your sails flog unless it can’t be avoided. Remember, if you work on your boat, your boat will work for you!

**Use other boats to help you!**

It’s very important to understand that in almost all kinds of sailboat racing, the only way to truly judge your performance is by comparing it to the performance of other boats. In other words, boatspeed is relative. Of course, your instruments (if you have them) can help you sail faster. But even the most sensitive instruments cannot measure the subtle differences in speed and pointing that are so critical in sailboat racing. The only way to measure those is by gauging how you are doing compared to one or more other boats.

Almost every serious racing campaign, from the Olympics to the America’s Cup, uses two boats to leapfrog forward. So when you are trying to get up to speed before the season, or before any individual race, a big part of your plan should involve sailing with another boat. (See pages 14-15 for tips on how to work on speed with a partner).



JH Peterson photo

### **Focus on speed priorities.**

There are many factors that contribute to good performance, and almost no one has enough time to optimize all of them. So identify the key elements and try to prioritize your time and resources to work on these.

Three obvious priorities are sails, rig tuning and hull finish. Your sails, in particular, play a vital part in boatspeed. There are three reasons why every sailor should treat his or her sails with tender, loving care. The first is to maintain their fast racing shape as long as possible. The second is to prevent sail failures that could cost you a race or series. The third is to reduce the cost of replacing sails.

In the ideal world you should have at least three suits of sails: one beat-up suit for practice sessions where speed doesn't matter (e.g. when you are practicing maneuvers); one pretty good suit for practice sessions where speed matters; and a new racing suit. Of course, not everyone can afford this, but if your resources are limited, put sails near the top of your boatspeed priority list.



*Don't forget to bring your*

## **TUNING & CODING TOOLS**

When you are working on speed (whether it's on land or while you are practicing), bring along a bag with essential tuning stuff:

- |  |  |
|--|--|
| <input type="checkbox"/> <b>Basic necessities</b>    | Vise grips, screw drivers, wrenches . . .          |
| <input type="checkbox"/> <b>Tape measure</b>         | Long enough to measure rake from masthead.         |
| <input type="checkbox"/> <b>Tension gauge</b>        | To measure shroud tension.                         |
| <input type="checkbox"/> <b>Sail repair tape</b>     | Perfect for putting number scales on controls.     |
| <input type="checkbox"/> <b>Black magic marker</b>   | For number scales, halyard marks, trim lines, etc. |
| <input type="checkbox"/> <b>Electrical tape</b>      | Best for securing and covering rigging pins.       |
| <input type="checkbox"/> <b>Silicone seal</b>        | Use it to secure outer ends of electrical tape.    |
| <input type="checkbox"/> <b>Lubricating spray</b>    | Helps make everything work better.                 |
| <input type="checkbox"/> <b>Extra pins and rings</b> | Bring some extra cotter, ring, clevis pins.        |
| <input type="checkbox"/> <b>Digital camera</b>       | Take photos of sail shape when you're fast.        |
| <input type="checkbox"/> <b>Sailing notebook</b>     | Keep a book with all your set-up information.      |
| <input type="checkbox"/> <b>Tuning guide</b>         | Include a copy of your sailmaker's tuning guide.   |

### **Quantify your trim settings.**

If you want to improve your speed, you must be able to identify fast tuning and sail trim settings and then reproduce them from race to race, regatta to regatta and year to year. You won't make much progress if you are fast one week but slow the next because you forgot how your boat was set up. This idea of reproducibility is a key building block for better speed.

In order to reproduce your settings, you must label and code all your sail controls. For most boats, you can do this with a few basic tools (*see above*) including a tape measure (for rake, jib lead position); a tension gauge (for rig tension); and a magic marker/tape or a number strip (for calibrating your backstay, outhaul, jib halyard, cunningham and so on).

Place a mark or a number scale on each of your key controls so you can see its setting while you are sailing. Whenever you feel like the boat is "in the groove," note the corresponding trim numbers and record these in a notebook for future reference. The next time you go racing, start by setting your controls at the numbers that were fast for similar conditions in the past.

### **Follow these rules of thumb.**

When you're going fast relative to other boats, leave your settings alone (and remember them). Of course, as soon as the conditions change you will probably have to change gears to keep going fast.

When you're going slow, change something. Start by adjusting your mainsheet, jib sheet, backstay or crew position, since these controls will usually have the largest effect on speed. If you play with all of these and you're still slow, reconsider your entire tuning set-up.

When you change things, do it systematically (at least while you are practicing). Try to change only one variable at a time. This will keep things simple and make it easier to identify which changes make you faster or slower. Don't forget to record your findings (fast or slow) in your notebook.

### **Keep working hard.**

You can't just get your boat going fast and then sit back. The wind is constantly changing, so you must always be willing and ready to shift gears. Think of speed as an ever-changing flow of trim adjustments that are optimized for the wind you have at any moment. •





# Make your boat (and crew) more 'feel-friendly'

As we discussed in the previous pages, 'feel' is a very critical factor for getting your boat up to speed. In order to develop a good sense of feel, however, there are certain things you should do with your boat and yourself to make it easier to tune into your senses:

**Rudder and tiller:** Remove stiffness and play from your rudder and tiller. Because you'll need to sense very subtle changes in helm pressure, you must be sure your rudder moves as smoothly and freely as possible. On one-designs, try using a solid rubber universal on your hiking stick, lubricate your pintles/gudgeons, and make sure the tiller fits very tightly into the rudder head. On a boat with a wheel, tighten the steering cables enough so they eliminate play, but not so much they restrict or bind.

**Sheets:** Use small-diameter sheets with a minimal number of parts. The last thing you want on your one-design is a half-inch mainsheet with a six-to-one purchase. For all your sheets, reduce

the diameter and the number of parts as much as possible (especially in lighter air). This will give you the best feel for each sail.

**Mainsheet:** Hold the sheet in your hand as much as possible. This sheet is the main artery of your boat and one of the best ways to feel the boat's pulse. Cleating it is like flying a plane on auto-pilot. It works great if nothing changes, but in sailing things are always changing. You need the mainsheet to feel these changes and to make corresponding adjustments. Of course, it is impossible to hold the sheet on larger boats, but on one-designs it will give you a good feel for how the boat is doing.

**Spinnaker sheet:** If you trim the spinnaker sheet around a winch, try to use as few turns as possible so you can feel the spinnaker's pull. If you have a ratchet for the spinnaker sheet, leave it off as long as you can so the sheet runs freely through it.

**Hiking:** Keep your hiking straps tight enough so you are almost always exerting upward pressure on

the straps with the top of your feet. This gives you a more secure and steady connection to the hull (compared to the feeling you get when your legs are dangling loosely in the cockpit), which makes it easier to feel what the boat is doing.

Also, consider not wearing rigid hiking pants. These may be worth it if they allow you to hike a lot harder and longer, but they also make it more difficult to feel the boat.

**Clothing:** The best option is to wear light, non-restrictive clothing. It's difficult to race well when you're bundled up in clothes, so try to wear as little gear as possible. This will make it easier to sense changes in wind pressure and direction.

Of course, you shouldn't get carried away here because you won't be very effective when you're shivering from the cold. But if you can survive without gloves, for example, you'll be able to feel the pressure in the sheets and the tug of the helm a little better.

**Noise level:** Communication is a key part of sailing a boat fast, but other than essential talk, I like to have a quiet boat while racing. It's helpful to hear certain sounds when you're trying to go fast – the water flowing past your hull, wind noises, racing sounds from other boats and so on. This is most obvious to me when I'm racing on a big boat and the engine is running to charge the batteries. I find it tough to concentrate during this time – it's much easier for me to tune into the feel of the boat when things are quiet.

These are some of the things you can do to make your boat easier to feel. Remember, however, that "feel-friendly" does not necessarily mean "user-friendly." In fact, it can mean quite the opposite. Going to lighter spinnaker sheets, for example, may be brutal on a trimmer's hands. Often you have to accept a compromise – light and thin enough so you have a decent 'feel', but thick enough so you will survive. •



JH Peterson photo

On a one-design, one of the keys to good "feel" for the helmsperson is your mainsheet system. Choose a line diameter that's as small as you can stand (so it will run through the blocks easily), and use the fewest possible number of parts in your system. In light and medium air, keep your ratchet turned off so you can feel the pull from the sail. Make sure your cam cleat is set at the right angle and height relative to the turning block. If it's too high, the sheet will cleat itself frequently, and you should almost never cleat the main.

# IQ TEST

## Time for a mental check-up!

Quite a few of our issues during the past couple of years have covered tactical and strategic themes. Now here's a way for you to see how much you remember, and how well you can apply those rules of thumb to actual race-course situations. On the next 4 pages are 60 questions about all the mental aspects of sailboat racing. Find out how much you know about starting lines, laylines, ladder rungs, converging boats, windshifts, current, time and distance, choosing the longer tack and more!

We have designed this test only to help you evaluate your own strengths and weaknesses. So when you finish, check out the answer key on the last page (and look for full explanations in the next issue). Now grab a pencil and a pad of paper, and dive in. Good luck!



### Time and distance

**1** To determine the length of the starting line, you begin on a reach at one end and sail toward the other. If your speed is 5 knots, and it takes you 1 minute to run the line, roughly how long is it?

- A) 200 feet (60 meters)
- B) 500 feet (150 meters)
- C) 1000 feet (300 meters)
- D) You can't tell this way

**2** If it takes you 30 seconds to accelerate from a dead stop to your full speed of 6 knots, roughly how far will you travel by the time you reach full speed?

- A) 50 feet (15 meters)
- B) 100 feet (30 meters)
- C) 150 feet (45 meters)
- D) 300 feet (90 meters)

### The start and finish

**3** Before the start, you find that the average true wind direction is  $225^\circ$ . When you sight the starting line from the pin end toward the RC boat, it bears  $310^\circ$ . Which end is favored (for a windward start) and by how much?

- A) The line is even
- B) The pin is favored by  $5^\circ$
- C) The boat is favored by  $5^\circ$
- D) The pin is favored by  $10^\circ$
- E) The boat is favored by  $10^\circ$

**4** You are sailing up the final beat to an upwind finish. The finish line is set exactly like the line in Question 3 above. At which end should you finish?

- A) The line is even
- B) The pin end
- C) The committee boat end
- D) You can't tell from this info

**5** Before the start, you take a range on the starting line. You are 3 boatlengths to leeward of the committee boat, and you notice the pin buoy is lined up with a tall

building on shore. As you set up for the start in the middle of the line, you notice the pin is lined up with the tree again. Roughly how far are you from the starting line?

- A) You are right on it
- B) .75 boatlength
- C) 1.5 boatlengths
- D) 3 boatlengths
- E) It's not possible to determine

**6** At a Melges 24 regatta, the starting line is 300 meters long (about 41 boatlengths) and the pin end is favored by  $10^\circ$ . If Boat A starts at the pin and Boat B starts at the boat end, roughly how far will A be ahead of B at the start?

- A) 2 boatlengths
- B) 5 boatlengths
- C) 10 boatlengths
- D) They will be even

**7** Which of the following does not correctly describe how to finish quickly at an upwind finish?

- A) Finish near an end of the line
- B) Finish on starboard tack
- C) Shoot head to wind to finish
- D) Finish on a course that's perpendicular to the line

**8** The leeward (pin) end of the line is favored at an upwind finish, and you are sailing closehauled on starboard tack, heading for that end. If you want to finish as soon as possible, should you be:

- A) Right on the layline to the pin
- B) Slightly above the layline
- C) Slightly below the layline
- D) None of the above

#### Some information that might be helpful:

**Windshift gain and loss:** When the wind changes direction, boats will gain or lose roughly 11-12% of the lateral distance between them for every  $5^\circ$  of windshift.

**Distance & speed:** A boat travels roughly 1.67 feet (.5 meters) per second for every knot of speed. For example, a boat going five knots travels about 8.5 feet (2.5 m) per second.

'Ladder rungs' are imaginary lines on the water perpendicular to the wind direction.

**True wind** is the wind felt by someone on land or an anchored boat. **Sailing wind** is what you'd feel if you were on a log floating in the water; it includes the effects of current.

- Multiple choice questions may have more than one answer.

## Strategy in current

**9** When you are racing upwind in a cross-current and you expect the wind to get lighter (with the wind direction and current staying the same), it will pay to sail the up-current tack first. T F

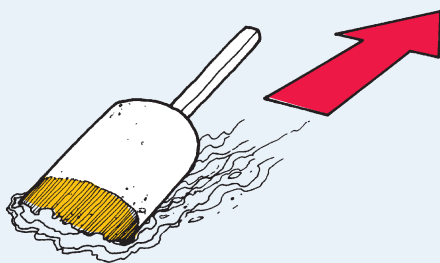
**10** If one tack takes you directly into the current, you can increase your velocity-made-good to windward on that tack by pinching so the current hits the leeward side of your bow. T F

**11** When sailing upwind in current, you feel more apparent wind on the down-current tack than the up-current one. T F

**12** When you're racing upwind in current, it usually pays to stay in rougher water. T F

**13** In current, which are not good ways to determine the direction of your sailing wind?  
A) Shoot head to wind  
B) Read your instruments  
C) Bisect your tacking angle  
D) Watch the RC boat flag  
E) Use the ripples on the water

**14** A starting line is set so it is exactly square to the sailing wind. There is a 2-knot current running perpendicular to the wind, from the pin end of the line toward the RC end. One boat starts on starboard tack at the pin end while another starts on port tack at the RC end. If they sail to opposite corners of the beat (neither overstands and there's no change in wind or current), which will get to the windward mark first?  
A) Boat that started at pin end  
B) Boat that started at RC end  
C) They'll get there at same time



## Converging boats

**15** When you are closehauled on port tack converging with a starboard tacker, you can usually apply a good lee bow if you are bow-to-bow with them. T F

**16** When boats are crossing you on a beat in an oscillating breeze, it's usually good to "bite the bullet" and go behind them. T F

**17** When you want to hurt a boat with your wind shadow, you should position yourself directly between them and the true wind direction. T F

**18** You are sailing on starboard tack on a beat, converging with a port tacker. You take a bearing of 135° on the other boat's bow; 15 seconds later the bearing is 133°. You will most likely:  
A) Cross ahead of the other boat  
B) Cross behind the other boat  
C) Collide with the other boat.

**19** A few minutes ago the wind direction was 345°. You were on port tack and you ducked behind a starboard tacker. Now you are on starboard tack, converging with the same boat and the wind direction is 341°. You will probably:  
A) Cross ahead of the other boat  
B) Cross behind the other boat  
C) Collide with the other boat.

**20** You're on starboard tack, crossing 2 or 3 lengths ahead of a port tacker on a beat. Which of these is not a good time to tack right on the port boat's wind?  
A) The left side is favored  
B) You just got headed  
C) You're near the port layline  
D) They're all OK

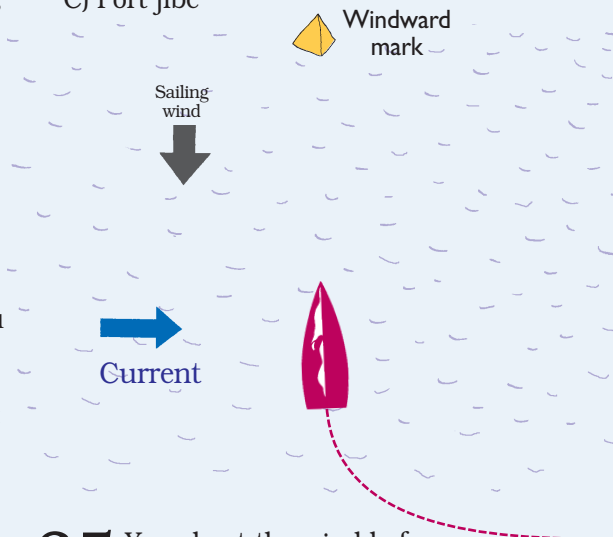
**21** You are racing upwind on starboard tack, converging with a port tacker that cannot cross ahead of you. If you really like the left side of the course, you should:  
A) Yell "Starboard!"  
B) Let them cross in front of you  
C) Pinch up slightly  
D) Tack

## The longer tack

**22** On both beats and runs, it usually pays to sail the longer tack or jibe first. T F

**23** The wind direction is 240° and from where you are the windward mark bears 230°. Which is the longer tack to that mark?  
A) Starboard tack is longer  
B) Port tack is longer  
C) Both tacks are even

**24** On a run you are sailing a heading of 065° on starboard jibe. Your heading on port jibe was 025°. You take a bearing on the leeward mark and find that it bears 040°. Which jibe is longer?  
A) Both jibes are even  
B) Starboard jibe  
C) Port jibe



**25** You shoot the wind before the start and note your bow is pointing directly at the windward mark. You know there is current running from left to right as you look toward the mark. Which tack will be longer on the first beat?  
A) Starboard tack  
B) Port tack  
C) Both tacks are even  
D) You can't tell from this info

**26** Which of the following is not a good reason for sailing the shorter tack first?  
A) There's a persistent windshift  
B) Current is better on one side  
C) You're not sure what the wind will do next  
D) You're covering boats behind



## Playing windshifts

**27** A shift in wind direction that favors one side of a windward leg will usually favor the opposite side of a run. T F

**28** When the wind direction changes, the boat that's farther from the new wind direction will almost always lose. T F

**29** If you have wind sheer at the top of your mast, it often shows an upcoming change in wind direction at sea level. T F

**30** When you're racing upwind in an oscillating breeze, you should treat the last shift before the mark as a persistent shift. T F

**31** When the wind is oscillating, it usually pays to sail slightly faster than normal (i.e. you should 'foot' a little) whenever you are on the lifted tack. T F

**32** When there is wind sheer, you will often sail faster on one tack than the other. In this case, it's usually better to sail on the faster tack first. T F

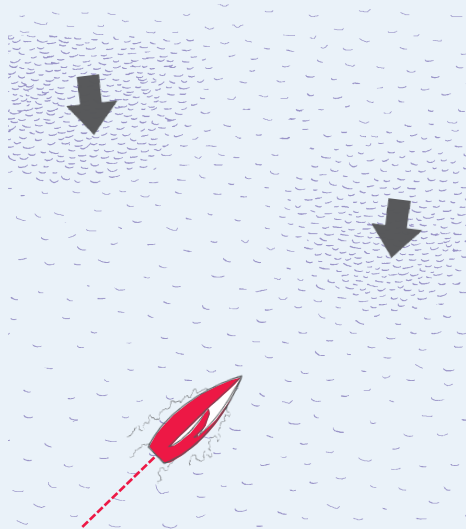
**33** When the wind direction shifts, the amount you gain or lose relative to another boat is roughly proportional to the size of that shift. T F

**34** When the wind shifts, the amount you gain or lose relative to another boat is roughly proportional to the lateral separation between boats. T F

**35** In a persistent shift, the best strategy is usually to go all the way to the layline before tacking or jibing. T F

**36** Which one of the following conditions is most likely to be associated with a *persistent* windshift pattern?

- A) The wind is from the shore
- B) You see puffs on the water
- C) You have a building thermal
- D) Boats gain on both sides



**37** Which one of the following conditions is most likely to be associated with an *oscillating* windshift pattern?

- A) More current on the left
- B) Land on one side of the beat
- C) A cold front recently passed
- D) Continual lift on port tack

**38** Your crew job includes reading the compass upwind. Assume you are sailing on a starboard-tack lift, heading 10° above your median. Now the wind shifts 5° to the left, so your helmsperson has to bear off 5°. Should you say:

- A) "Down 5"
- B) "Up 5"
- C) "We're at the median"
- D) "Tack!"

**39** When you have wind sheer aloft, you will often notice differences from tack to tack in all of the following except:

- A) True wind speed
- B) Sail trim
- C) Boat speed
- D) Apparent wind angle

**40** You are racing upwind in an oscillating breeze. Your headings on starboard tack range from a low of 305° to a high of 325°, with a median of 315°. In the middle of the beat you are sailing 325° on a starboard-tack lift, and then you start to get headed. At what compass heading would you ideally tack onto port?

- A) 320°
- B) 315°
- C) 310°
- D) 305°

## Ladder rungs

**41** The true wind direction is roughly 240°. You are racing upwind and you take a compass bearing of 335° on your nearest competitor. How are you doing relative to that boat?

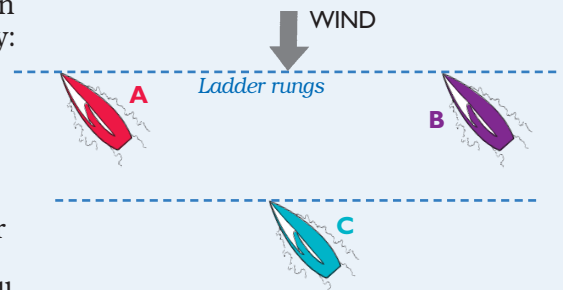
- A) You're ahead
- B) You're behind
- C) Both boats are even

**42** On a run, your average headings on each jibe are 185° on starboard tack and 155° on port tack. The boat that you have to beat in the series bears 080°. Are you ahead of or behind this boat?

- A) You're ahead
- B) You're behind
- C) Both boats are even

**43** You're on port tack on a beat converging with a starboard tacker who's far away. According to your compass, the other boat bears 004°. A minute later the bearing is 358°. Are you ahead or behind?

- A) You're ahead of the other boat
- B) You're behind them
- C) Both boats are even



**44** Here are 3 boats beating toward the windward mark. If the wind shifts to the right, which statement(s) are definitely true?

- A) A and B will be even
- B) A will be ahead of B
- C) B will be ahead of A
- D) C will be ahead of A

**45** On a long beat, two 20-foot boats are 1.0 miles apart (6,080 feet) and dead even in the race. Now the wind shifts 1° to the right: Roughly how far ahead is the boat that was on that side?

- A) 1 boatlength
- B) 7 boatlengths
- C) 20 boatlengths

# Tactics & STRATEGY

# IQ

## TEST

### Runs and reaches

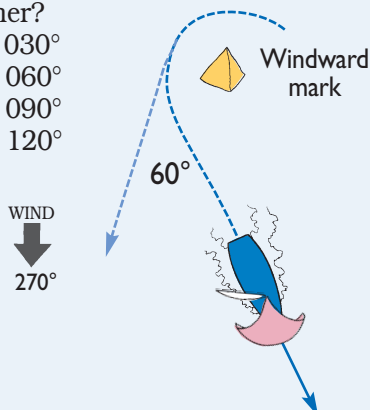
**46** On a run, you should usually sail *away from* the direction of the next wind shift that you expect. T F

**47** When running, you should normally sail for wind shifts rather than puffs. T F

**48** You are approaching the windward mark on starboard tack and you must set your spinnaker onto a run. It's usually smart to do a jibe set when:  
 A) You are sailing on a header  
 B) You can fetch the leeward mark on port jibe  
 C) Your crew is inexperienced  
 D) The wind speed is light

**49** As you sail toward the windward mark, the true wind direction is steady at 270°. You are planning on a jibe set at the first mark, and you know your jibing angle in these conditions is about 60°. The helmsperson asks you for the approximate compass heading that she should steer on port jibe after the set. What do you tell her?

- A) 030°
- B) 060°
- C) 090°
- D) 120°



**50** If the wind and current are steady on a run, it's usually better to play the \_\_\_\_\_ side of the course (looking downwind) as you sail toward the leeward mark.  
 A) Right  
 B) Left  
 C) It doesn't matter

**51** You should generally not sail high on a reaching leg when:  
 A) You're expecting a header  
 B) The wind velocity is decreasing  
 C) Boats behind are going high  
 D) Current is going to windward

**52** It could be a good strategy to take the low road on a reaching leg when:  
 A) The wind is oscillating  
 B) You can't hold a spinnaker  
 C) The wind speed is building  
 D) Boats ahead are going high  
 E) Low is inside at next mark

### Miscellaneous questions

**53** A decrease in wind speed (i.e. a lull) causes a 'velocity header', while an increase in wind speed (i.e. a puff) causes a 'velocity lift.' T F

**54** When the wind is oscillating regularly, you should usually tack when you sail into a velocity header. T F

**55** The negative effects of sailing in another boat's wind shadow are more pronounced in heavy air than in light air. T F

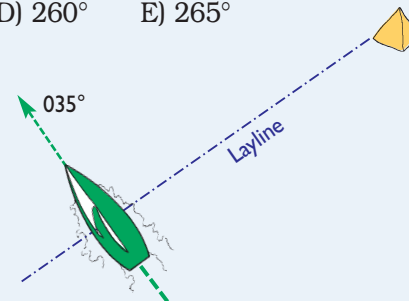
**56** It's OK to stay on the headed tack when you are:  
 A) Sailing into a persistent shift  
 B) Trying to get clear air  
 C) On a run  
 D) All of the above  
 E) None of the above

**57** If the wind and current are steady on a windward leg, it is usually better to play the \_\_\_\_\_ side of the course (looking upwind) as you sail to the windward mark.  
 A) Right  
 B) Left  
 C) It doesn't matter

### Calling the laylines

**58** Which of the following factors would not influence the location of the laylines to a windward mark?  
 A) Wind direction  
 B) Wind velocity  
 C) Set and drift of current  
 D) Type of boat you are sailing  
 E) Wave height  
 F) None of the above

**59** You are beating on port tack, approaching the starboard layline to the windward mark. You are steering a course of 260° and the true wind direction is 225°. What will the mark bear on your compass (roughly) when you're on the starboard-tack layline?  
 A) 190° B) 195° C) 225°  
 D) 260° E) 265°



**60** On a beat, your average upwind headings have been 115° on port tack and 035° on starboard. You're approaching the port layline on starboard tack. If you look at your windward side tacking lines, how many degrees off your bow will the mark bear when you're on the layline?  
 A) 0° B) 35° C) 40°  
 D) 80° E) 90°

### ANSWERS

A more complete explanation of each answer will be printed in the next issue!

1. B 2. C 3. C 4. B 5. C 6. C 7. D 8. C  
 9. False 10. False 11. False 12. True 13. D  
 14. C 15. False 16. False 17. False 18. A  
 19. B 20. A 21. B 22. True 23. A 24. C  
 25. A 26. C 27. True 28. False 29. True  
 30. True 31. True 32. False 33. True 34. True  
 35. False 36. C 37. C 38. B 39. A 40. B  
 41. A 42. C 43. B 44. C 45. B 46. True  
 47. False 48. B 49. B 50. B 51. B, D 52. D, E  
 53. True 54. False 55. False 56. D 57. A  
 58. F 59. A 60. D.

# S&S Back Issues

Almost all of the back issues of *Speed & Smarts* are still available in Paper and/or PDF format. To see a list of topics and prices or to place an order go to:

[SpeedandSmarts.com/Order/BackIssues](http://SpeedandSmarts.com/Order/BackIssues)



David Delzenbaugh's **SPEED & Smarts**  
The newsletter of how-to tips for racing sailors March/April 2011

**BRAIN TEASER**  
**Can W do this?**  
Two boats overlapped on starboard tack approach the windward mark just before the starboard tack line. Can W beat the mark? (W has the right of way.)

**Attack your speed problem.**  
It's not that you're slow, it's that you're not sailing as fast as you could be. It's not that you're not sailing as fast as you could be, it's that you're not sailing as fast as you could be. It's not that you're not sailing as fast as you could be, it's that you're not sailing as fast as you could be.

**ISSUE #116**  
**A Case of the Slows**  
THEME: Attack a speed problem... 1  
TASER: As a windward mark... 2  
IN THEORY: Speed issue... 2  
KEY CASE: Tackling the slow... 4  
BOATPEDIA: Revisited... 6  
TECHNIQUE: Two boats overlapped... 10  
TOOL BOX: Revised fast winch... 12  
RULES CORNER: Applicable rule... 14  
TASER ANSWER... 16  
TACTICAL TIPS: Easy thing to do... 16



David Delzenbaugh's **SPEED & Smarts**  
The newsletter of how-to tips for racing sailors No. 97 May/June 2007

**BRAIN TEASER**  
**Put 'money in the bank'**  
On a big fleet race, you put the windward mark further mark rather than you wanted. After sailing for a minute with you pointing at the windward mark, you started to get off and now you are pointing about 10° above the mark. Should you keep sailing high of the mark, or bear off slightly to aim the mark?

**Go the 'right' way!**  
Tactics as we discussed in the last issue are boat-on-boat moves. When you're off the mark and you're on the water, these maneuvers are designed to help you keep control of, or avoid being controlled by, your competitors.

**Upwind Strategy**  
THEME: On the right way... 1  
BRAIN TEASER: Above the water... 2  
FOCUS: Make a gameplan... 2  
WIND: Wind velocity... 4  
BOATPEDIA: Revisited... 6  
TECHNIQUE: Two boats overlapped... 10  
TOOL BOX: Revised fast winch... 12  
RULES CORNER: Applicable rule... 14  
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TACTICAL TIPS: Easy thing to do... 16

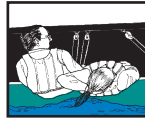


David Delzenbaugh's **SPEED & Smarts**  
The newsletter of how-to tips for racing sailors No. 85 Nov/Dec 2004

**Finish with a bang!**  
When you've got the finish line in your sights, it's time to think about the different paths you might choose. You could take a deep breath, relax and coast to the finish. Or you could make a push as hard as possible until the very end.

**Which end is favored?**  
The flag leg of your race is a long one. It's not that you're slow, it's that you're not sailing as fast as you could be. It's not that you're not sailing as fast as you could be, it's that you're not sailing as fast as you could be.

**Fast Finishes**  
THEME: Finish with a bang... 1  
BRAIN TEASER: Forward end... 1  
IN THEORY: Pick the favored end... 2  
STRATEGY: Show the finish line... 4  
KEY CASE: Four boats at the finish... 6  
SUBJECT INDEX: 2004... 10  
TASER ANSWER... 11  
RULES CORNER: Rules at the finish... 12  
TACTICAL TIPS: That other boats to the... 14  
CREW WORK: That crew work meeting... 16



## TECHNIQUE

# Cultivate your sense of feel

If you want to go faster in a straight line, do some two-boat testing. If you want to improve your boathandling, practice a bunch of mark roundings. But if you're trying to develop a better sense of feel for the boat, what can you do? Some people seem to be born with the innate ability to understand how a boat feels. If you're not one of them, don't despair – it is definitely possible to cultivate a better sense of feel. Here are some activities you might try during your next practice session:

• **Extend your wind range.** Many sailors don't make the effort to practice when the wind is blowing less than five knots or more than about 20. But those are the conditions when it's hardest to get a good feel for the boat. So next time keep practicing when the wind gets above or below your normal range. Push your limits as if you were racing.

• **Sail a different boat.** A sense of feel is very important on boats of all sizes and weights, but it's definitely harder to feel some boats than others. To counter this, try sailing a boat that is smaller and lighter than your usual ride. If you race a J/24, for example, try a Laser and you will experience a whole new world. If you already sail a small, light boat, try a heavier keelboat. When you go back to your regular boat you'll experience how it feels in a new, different way.

• **Sail a really different boat.** If you race with a symmetrical chute, try an asymmetrical. If you sail a monohull, try a catamaran. Better yet, sail a skiff or even an iceboat. When you can't see the wind on the water you really have to tune in to how the boat feels!

• **Sail "blind".** Most sailors depend almost entirely on sight for sailing, and this overwhelms their sense of feel. To improve your sensitivity, reduce your visual stimulation by either wearing a blindfold or closing your eyes. This forces you to sail the boat by relying on your senses of balance and feel. (Make sure you have someone else to keep a lookout and give feedback on how you're doing.)

• **Sail with no rudder.** If your boat has a rudder that is easily removable, try taking it out for a while (you may need to pull up your centerboard half way or so to balance the boat and make it easier to sail). Now you must really feel the boat and "steer" it by trimming your sails and moving your weight from side to side.

• **Switch positions.** Crews and skippers often get locked into their positions on the boat, and this makes it difficult to understand the 'big picture' of what's going on. To remedy this, try switching positions occasionally during practice. If you normally trim the jib, try doing the bow or steering. If you usually steer the boat, sit on the rail and call puffs. This can be a lot of fun, plus it forces you to feel the boat in a new way and will give you some perspective on your regular position.

• **Sail with a different skipper or crew.** It's nice to sail with the same old friends all the time, but as sailing the boat is concerned, it's easy to get into a rut. By sailing with new people, you may experience the boat and race in a completely new way. Listen to what they say and watch what they do; then bring the good ideas back to your crew.

• **Turn off your instruments.** On bigger boats, it's easy to become mesmerized by all the numbers on your instruments. So turn them off during certain practice sessions. The best time is when you are sailing near another boat (so you will have some feedback on how you're doing). Without instruments, you will have to talk with each other more about how the boat feels (e.g. is it accelerating or decelerating?). Even if you have only a compass on your boat, put tape across the top and sail a practice session (or even a race!) without relying on it. •





# Improve speed with communication

When it comes to better speed, communication is key. Imagine a boat where no one is allowed to talk. What a disadvantage that would be! If you want to make your boat go as fast as possible, you need to get contributions from everyone on your team. Speed is not just something for the helmsperson or trimmers to worry about. Every crewmember has their own unique experience and their own particular viewpoint. So don't be shy about speaking up. There are so many things you can say to help make the boat go faster.

**How the boat feels** – It's important for everyone on your boat to get involved in the "sailing by feel" process. Even though not everyone is holding the tiller or jib sheet, it's still valuable for crewmembers to verbalize what they are sensing about the boat's performance. Here are some examples:

- "We're building speed slowly."
- "I need more pressure in the spinnaker."
- "We have a lot of leeward heel."
- "It feels like the wind velocity is down."

As a helmsperson, I like to have people say what's on their mind even when they think it may be obvious to the rest of the crew. Usually it isn't, and verbalizing the feeling makes everyone more aware of what is happening (and more comfortable about contributing).

**Speed and height** – When you're working on speed, it's critical to observe and report your boat's performance relative to that of nearby boats. That's why all of page 13 is devoted to this process.

**Changes in the wind and waves** – Crewmembers are usually in the best position to see the puffs, lulls, waves and flat spots that are coming toward the boat. The key here is to give the rest of the crew a warning about any changes that may require shifting gears:

- "Puff coming in 5 - 4 - 3 - 2 - 1!"
- "Three big waves in a row."
- "We're sailing into a lull."
- "More pressure to leeward."

**Trim comments** – Sail trimmers should talk to the helmsperson about the sail they are trimming:

- "I can trim the jib another inch."
- "I'm easing the spinnaker."

When you're hiking hard on any kind of boat, it's difficult to see your own boat and sails, not to mention the rest of the race course. In order to sail the boat fast you need a good sense of feel and the resolve to stay involved in the "speed loop."

- "I will trim to the course you're steering."
- "I'm standing by to ease the vang."

**Other suggestions** – There are probably a million things that crewmembers could say to help make a boat go faster. Sometimes the hard thing is getting up your nerve to communicate an idea that you may not be 100% sure about. In that case, try sharing the idea with one other crew first and see what they think:

- "Maybe we should try more rake like last week."
- "The last time we had big waves we put the jib lead in hole 6."
- "I think we should try sailing the boat flatter."
- "The jib halyard is at setting #5 now."

**Ask questions** – Remember that communication is a two-way street, so don't hesitate to ask questions when you need more information to do your job better.

- (to the skipper) "How much helm do you have?"
- (to the trimmer) "Want any more jib halyard?"
- (to anyone) "What's our target speed?"
- (to the skipper) "Where do you want my weight?"

Whenever you communicate during a race, speak loudly and clearly. Make sure the people who need to hear your comment actually hear it. If you say there's a big wave coming, for example, talk so the leeward-side genoa trimmer can hear you.

When a crew starts sailing together, one of the best reasons for talking is to set a good example and make it easier for others to speak up. Once you get everyone communicating and contributing, better boatspeed won't be far behind. •



JH Peterson photo

# How to describe your boat's performance

If your job on the boat allows you enough time to carefully observe other boats while you are racing upwind or downwind, you can help your team by describing your boat's relative performance. Watch the other boat for a period of time to see whether you are going faster, slower, higher or lower.

Try to describe both variables as precisely as possible (*see sample dialogue below*), and focus mostly on changes in relative speed and height when they occur. For example, if you are the windward boat and you are getting farther from the leeward boat, you are probably pointing higher. If you are gaining bearing (i.e. you're moving forward on them) you are probably going faster through the water.

Speed and height are usually inversely proportional. It's great to be faster and higher upwind, but normally if you point higher you go slower, and if you point lower you sail faster. In these cases, it's not always clear whether you are gaining or losing on the other boat. If you're going a lot faster and a little lower that's good. But if it's a little faster and a lot lower that's bad.

Therefore, instead of just saying "We're higher and slower" or "We're lower and faster" it is helpful to give

## A sample speed conversation

When you are trying to get your boat up to speed, it's very important to know how you are performing relative to your competition. To do this, watch a nearby boat and give a running report for the rest of your crew. Here's a sample of what you might say:

"We're a little lower, same speed."

"Still a little lower, maybe faster now."

"We're the same height, same speed."

"Slightly higher, and speed is at least the same."

"A little lower, and now a bit faster."

"Still lower and faster, but we're gaining."

"Almost the same height, a lot faster."

"Same height, still faster."

"Higher and faster."

"Still higher, speed is dropping."

"A little higher but also a little slower."

"Higher and slower, net gain to them."

"Same height, same speed."

your opinion on which boat is making a net gain upwind.

For example, you might say "We're higher and slower, net gain to us." This means even though your speed is slower, your better pointing more than makes up for it. Therefore, you are making better progress to windward.

To avoid confusion, always talk about your own boat. That way,

when you say "higher and faster," everyone will know this refers to your boat, not the other one. Speak loudly enough so you can be heard by the sail trimmer(s), tactician and helmsperson, since all these people need the information you are giving. And make sure to give speed information at critical times in a race, such as just after the start. During these periods, your speed reports may be nearly non-stop, like a horse-race announcer. •

## Speed and Height

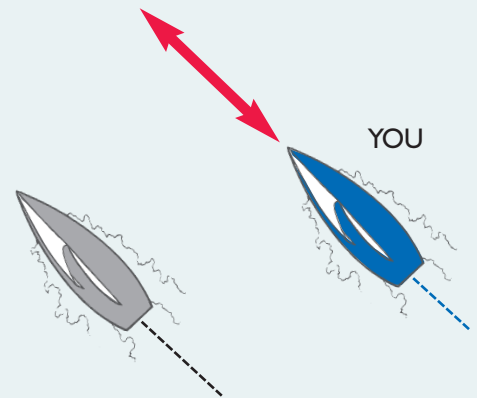
When you are racing upwind or downwind, there are two dimensions of performance – *speed* and *height*. Speed is how fast the boat moves through the water in a direction parallel to its centerline. Height refers to how high it is pointing, or moving in a direction perpendicular to its centerline (*see below*). These speed variables are like the X and Y axes on a plane – that is, they describe the relative position and movement of racing boats across the surface of the water.

Just as you cannot describe a point on a graph without knowing both the X and Y coordinates, you can't describe relative performance by talking about only one variable. It means nothing, for example, to simply say "We're faster." It's great to be faster, but you could be sailing on a beam reach, which won't get you upwind very fast. Instead, talk about both speed *and* height. For example, "We're faster and the same height." This gives your fellow crewmembers enough information to make an accurate evaluation of your performance.

### SPEED

The speed of a boat is a measure of how fast she is moving straight ahead through the water. There are only 3 ways that your speed can compare to another boat. You could be:

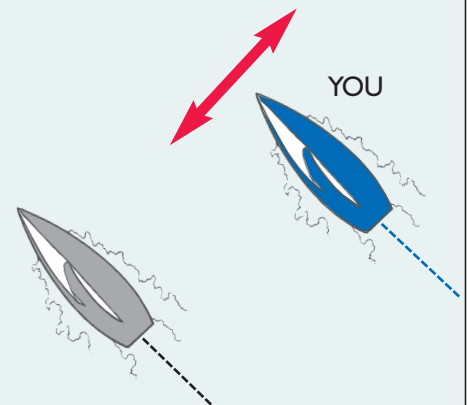
- Faster
- Same speed; or
- Slower



### HEIGHT

The "height" of a boat is a measure of how close she is sailing to the wind, or how well she is 'pointing.' There are only three ways that your height can compare to that of another boat. You could be:

- Higher
- Same height; or
- Lower





# FAQs about working on speed in pairs

Sailboat racing is competitive. But if you want to finish near the front of the fleet, you must usually be cooperative first. That's because, as I said earlier in this issue, performance is relative. The only accurate way to measure subtle differences in speed is by comparing yourself with a similar boat that is sailing nearby in the same conditions. So find another crew who would also like to work on speed, and go sail together. Here are some frequently asked questions about setting this up:

### When should I team up with another boat?

Almost any time when you're not racing. It's especially good when a) you haven't been racing for a while; b) you were slow in your last race; or c) you are sailing in different or unusual conditions. It works well to set up a two-boat session on a practice day when you have plenty of time to do lots of testing. In addition, most top sailors usually test with another boat for at least a few minutes before the start of every race.

### Who would want to tune up with me?

Probably more people than you think. All you have to do is ask, either on shore or while you are sailing around before the next race. If you see someone sailing closehauled, drop into a testing position with them and ask if they want to go upwind. I recommend picking another boat that is about the same speed as you.

### How can I do speed testing when I race PHRF?

First, look for a boat like yours. If there is another J/24 in your fleet, for example, ask if they'd like to work together between races to improve speed. If you are a one-of-a-kind, look for someone who has a similar rating and is interested in improving.

It's OK if one boat is slightly faster than the other, as long as both boats know this and work to improve their *relative* performance.

### Is it really worth sailing with another boat?

Definitely. Two-boat training provides a great chance to work on speed and much more. It forces you to focus on steering, changing gears and communication among the trimmers and helmsperson. And it gives you instant feedback on how well you are doing this.

If you sail with another boat before the start of a race, this is also a great time to collect wind data and think about strategy. For example, if the boat on the right side of the pair always gains, this may indicate that the right side of the first beat will be favored.

### How long should we keep sailing side by side?

Once you are lined up properly, keep sailing until you have a result – i.e. one boat makes a noticeable gain. Stop when the boats are no longer lined up correctly or if you see no apparent change after 10 minutes or so.

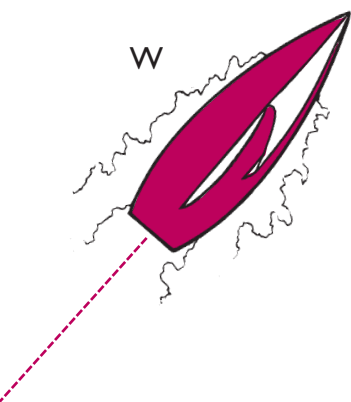
Once you finish an upwind test, you have several options, depending on the time available: 1) Line the boats up and start another test; 2) Sail alongside each other downwind and discuss the previous test; or 3) Set chutes and start speed-testing downwind.

### Any other ideas on how to learn from a lineup?

Sure. Try to switch sides every second or third test so each boat sails to windward and leeward of the other boat. Also, it's good to sail on both tacks so you learn to go fast on starboard and port. This will also help you identify asymmetries in your set-up.

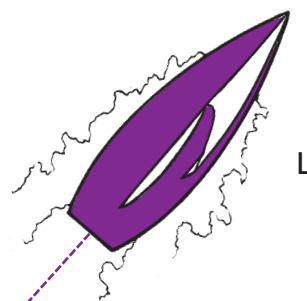
If one boat is always faster, try swapping helmspersons (or even the entire crew). This can be very helpful and will quickly tell you whether the difference is due to boat set-up or sailing technique.

Finally, sailing with another boat will be much more effective and fun if you communicate clearly with them. For practice sessions, use radios or cellphones to coordinate tests and discuss what you learn. •



### How should we position the boats to start?

For an upwind tuning session, it usually works best to set up the boats about three or four lengths apart so the leeward boat's bow is roughly half a boatlength ahead. This way the leeward boat (L) is not tempted to pinch off the windward boat (W), and W isn't tempted to foot off and roll over L. You don't have to start in this exact position, but something close is usually the most productive.

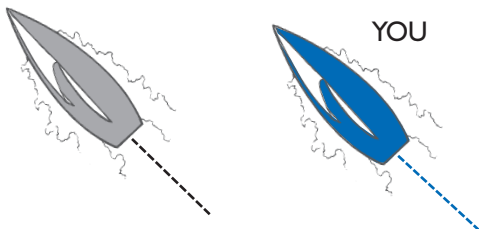




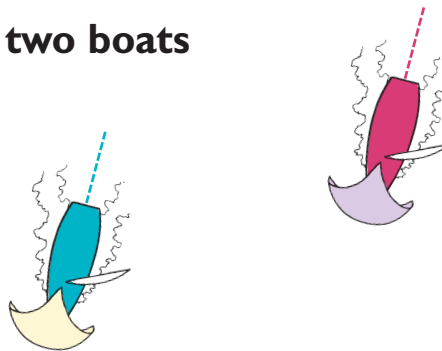


When you're tuning with a partner, it works best to have two identical boats, but this is not a requirement. In a handicap fleet you could pair up with any boat that is fairly close in speed with you. Once you figure out which boat is faster and by how much, try to make gains relative to that baseline. Most two-boat testing takes place upwind, but when you're ready to go back downwind, set your chutes and work on offwind speed.

## Other ways to learn with two boats



If you want a conclusive speed test, this is not a great starting position because it's too easy for the leeward boat to squeeze up and pinch off the windward boat. However, this is a very common (and challenging) position on the race course. If you want to learn how to survive when you are the windward boat, this is a perfect testing lineup. Work on your sail trim, steering and body movement to see how long you can hang in this position. Sometimes in a race all you need to do is 'live' in this position for an extra 30 seconds. By putting yourself in this situation during practice and trying different ways of staying there, you'll be more comfortable and effective when you have a boat on your leebow while you're racing.



There is an argument that two-boat testing on a run is even more crucial than on a beat because there is much more variation in downwind angles and boatspeeds. The ideal position for downwind testing is roughly like what's shown above. You want the boats to be close enough so they are in the same wind (several boatlengths apart), but far enough apart (and positioned properly) so neither one is affected by the bad air or the disturbed wake of the other.

Once you're set up like this, it's a great time to try out different sailing styles. Should you go lower and slower or higher and faster? The only way to know is by having another boat nearby.

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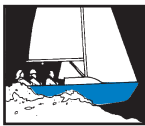
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# If it feels good, do it (usually)

Developing a more sensitive feel for your boat is an important first step in sailing faster for a greater percentage of the time. But once you start getting a better feel, then what? How can you actually improve your performance on the race course?

The basic rule of thumb is described in the headline above: If a trim adjustment makes your boat feel good, it was probably a good idea, and you should consider doing more of it.

For example, imagine that you are steering a one-design on the first beat of a race in moderate wind. You're holding the hiking stick in one hand and the mainsheet in your other, and the boat feels pretty good. You want to see if you can point a little higher, so you trim the mainsheet about two inches tighter.

Now you wait a moment to see what happens. Does the boat feel more lively and powerful? Or does it feel bound up and lifeless? If you feel the boat slow down at all, perhaps you have trimmed the sheet too far, so you should ease the sheet back out and bear off slightly. If the sheet trim feels good, however, then you might try trimming even harder.

It's a **continuous cycle**. As long as mainsail trim makes the boat feel better, keep trimming tighter (since this will improve your pointing). As soon as you start to feel the boat slow down, ease the sheet out, bear off slightly and get the boat back up to speed. Then start trying to trim it back in again.

The key to better performance is knowing how your boat feels when it's going fast. That's why, whenever you are practicing or racing with another boat and you're going better than your competitor, you should pay attention to "feel" factors. For example, how light or heavy is the helm? What is your angle of heel? How much pressure is in the mainsheet?

Record all this in your memory bank (or a notebook) so it's easier to re-create this fast feel every time you go out on the race course.

It's hard to describe exactly what makes a boat feel "good." Usually it means your boat is "**in the groove**," or performing at its optimum. If conditions are static, you may be able to find a perfect and precise trim set-up that works well for quite some time. The boat feels good because it doesn't slow down, and you have better height and speed than nearby boats.

However, when you have changeable conditions such as waves or a shifty wind, the set-up that feels best is usually one with a wider groove. In this situation, you may need sails with a fuller shape that aren't trimmed so tightly. This set-up feels "good" because it allows you to keep sailing fast even if you make a mistake (such as sailing too high for a moment).

In most situations, a boat that feels good is also performing well. But this is not always the case, so be careful. For example, it might feel good to bear off a little, get some power in your sailplan and boost your speed. A quick reality check with other boats will tell you if this is working or not.

Once in a while you'll find that a boat goes fast when you use a sailing or trimming technique that actually feels bad. One great example is sailing a boat flat in lighter wind. This usually feels bad because it makes the boat more critical with little margin for error, plus there is no windward helm to give you that comfortable feeling of being in the groove. Yet in some situations it can be very fast.

The **bottom line** is that a good "feel" is a means to an end, not an end in itself. If something makes the boat feel better, go for it. But make sure you keep checking in on your real goal – better performance! •

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**If you use the "feel good, feel bad" method to evaluate trim adjustments, you will usually be heading in the right direction.**