This is an excerpt from the Small Boat Sailing Level 2 Workbook. This information is being provided as a supplement to Steve Colgate's Performance Sailing and Racing book.

US SAILING TRAINING PROGRAMS

SMALL BOAT SAILING INSTRUCTOR COURSE
LEVEL 2 WORKBOOK

The National Standard for Quality Instruction
for and by Sailing Instructors

All original workbook material written
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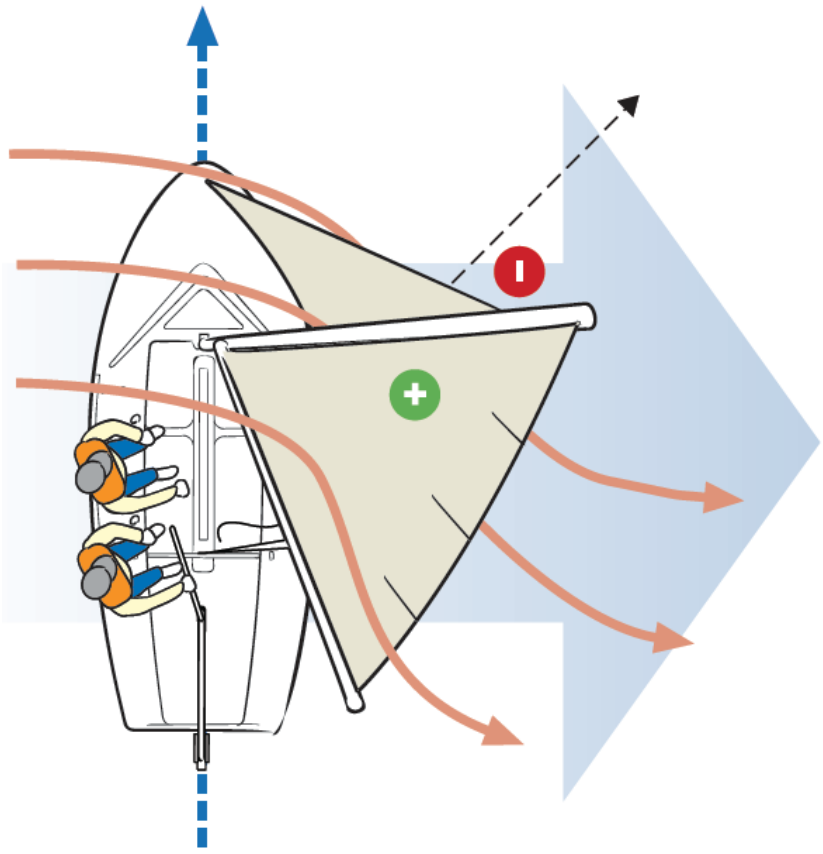
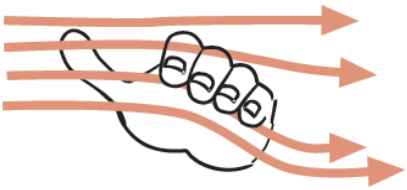
Pull Mode

On a reach or sailing upwind, wind (air) flows over both sides of a sail, lift is created which "pulls" the boat forward and sideways. For many students the concept of lift seems abstract and hard to grasp.



To maximize pull, and therefore boat speed, air must flow smoothly along the sail from the leading to the trailing edge. If Turbulent flow occurs, pull is reduced and boat speed decreases.

Lift can be demonstrated by blowing above a strip of paper which lifts the paper up.

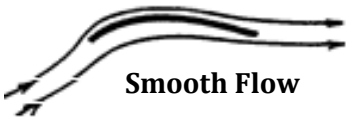


If you hold your hand out the window car, you can feel the force of the wind lifting your hand. This is the same force that "pulls" a sailboat forward when the wind comes over the side of the boat.

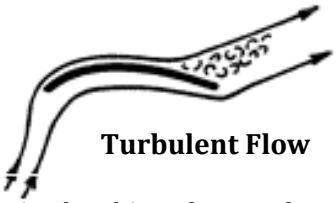
Angle of Attack

The angle of attack is the angle between the wind and the sail and it determines whether smooth or turbulent airflow is achieved. This angle is controlled by sail trim (primarily sheet tension) and steering.

When discussing angle of attack, point out that the flutter of a sail's leading edge and the sail telltales indicate whether there is smooth or turbulent flow and are used to optimize the angle of attack for sail trim and steering.



Proper Angle of Attack
Proper sail trim



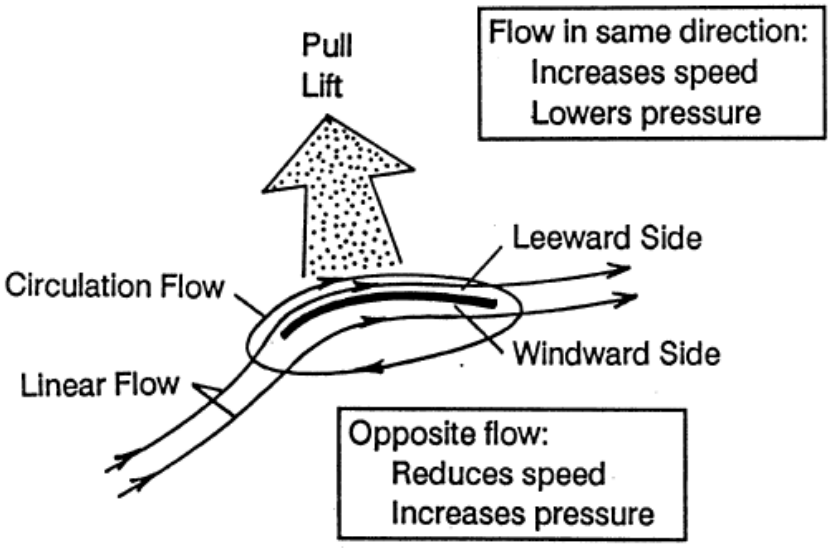
Angle of Attack is too large
Sheet is overtrimmed

Supplementary Information for Instructors

The following is more advanced theory information, which is not necessarily intended to be taught to intermediate level students but used as a resource by instructors who may have to answer some questions from technically minded students.

When wind flows by both sides of a sail in the "pull mode," both linear air flow and circulation flow occur. The combination of linear and circulation flow results in:

- High-speed flow (low pressure) on the leeward side of the sail and low-speed flow (high pressure) on the windward.
- A change in flow direction from when it approaches and leaves the sail.



For a more detailed explanation on circulation flow refer to *The Art and Science of Sails* by Whidden and Levitt.

The Relationship between Velocity and Pressure

Bernoulli determined that when airflow (or water) increases its speed, pressure decreases; and conversely when airflow (or water flow) decreases, pressure increases. This is often referred to as Bernoulli's Principle.

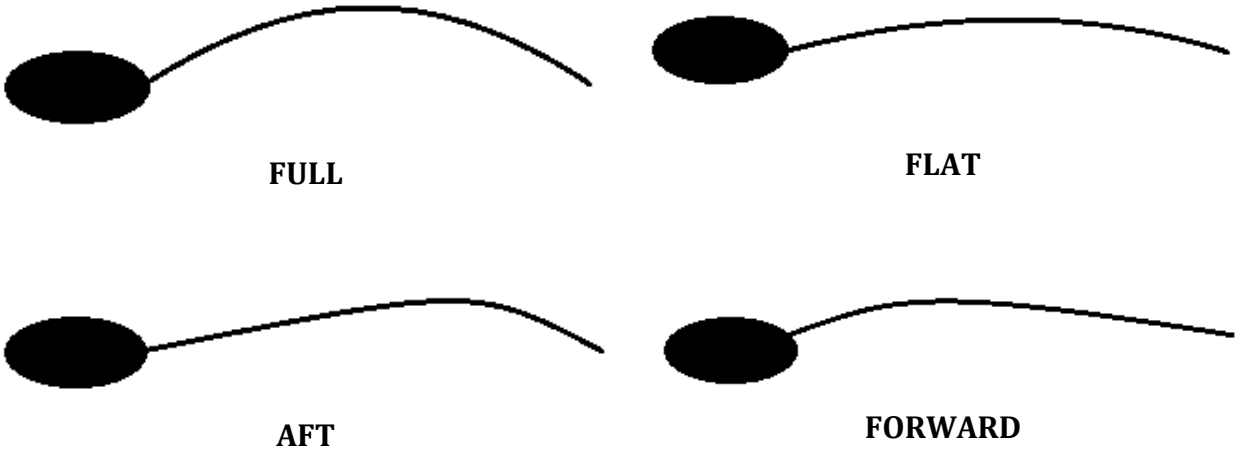
Sail Shape and Performance Concepts

It is important that your students understand the following sail shape concepts -they form the basic reference for using sail controls, which will be discussed in the following pages.

Draft describes the curvature of a sail's shape in terms of amount (depth/ fullness) of curvature and the position of the maximum depth.

Defining Sail Shape

The shape, or draft, of a sail is described by:



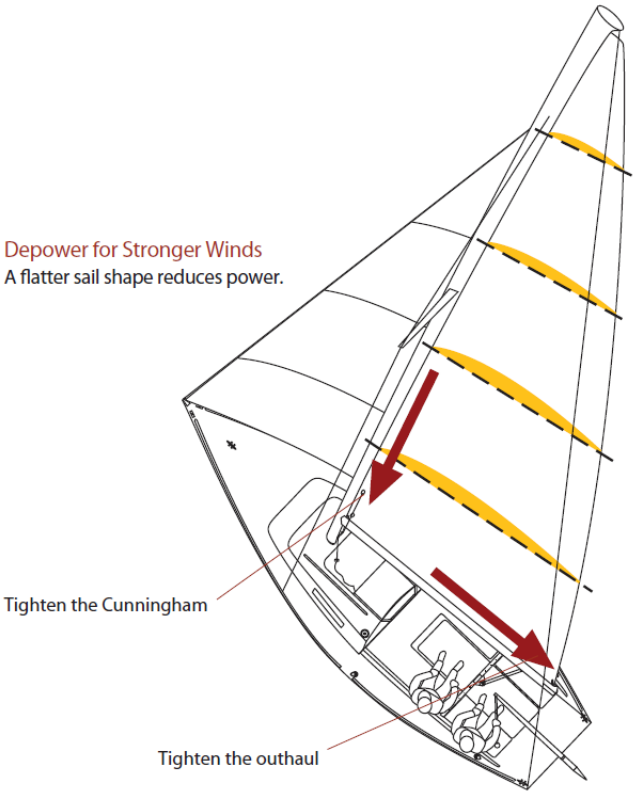
Sail Shape and Power

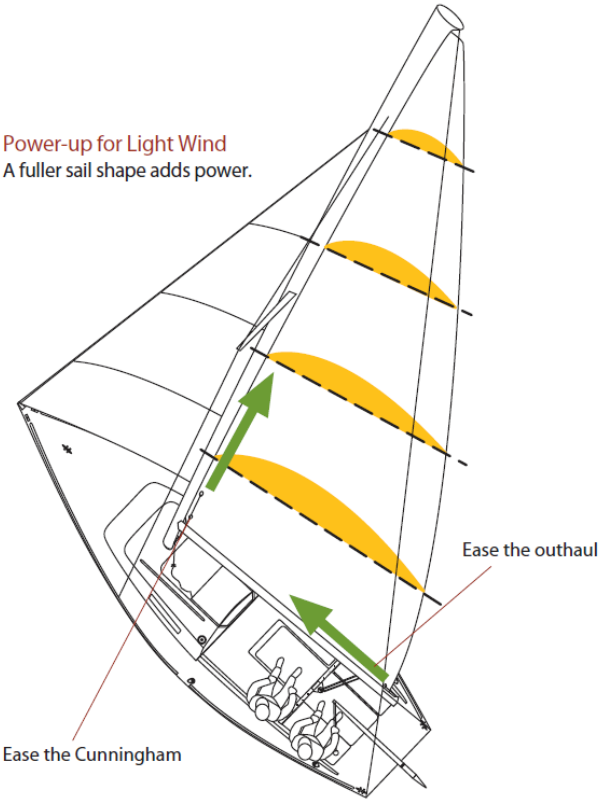
DEEPER sails have more POWER; FLATTER sails have less POWER. This is a very important concept to understand.

As long as the crew weight in the boat can balance the boat and keep it sailing flat and under control upwind, the sails can be set for maximum POWER. The moment the crew can no longer keep the boat sailing flat and under control without heeling over or having to let the sails significantly luff, it is time to DEPOWER the sails.

Speed Mode/Point Mode

The FLATTER the sail shapes are, the closer the boat will sail or "point" to the wind. The trade-off is that FLAT sails DE-POWER the boat, generally making the boat go slower. If the breeze is strong enough to not need as much power in your sails to go fast then make the sails FLATTER and you will make more efficient progress upwind. If the sails need power to go fast through the water in lighter air or in choppy conditions, make the sails FULLER.





Flat Water/Flat Sails

When the boat is sailing in waves, it needs more POWER to try and get through and over them. When the water is smooth, the boat requires less POWER. When the boat doesn't need power, it is good to FLATTEN the sails and point high. As the waves build, it is important to put more POWER back in the boat by making the sails slightly FULLER.

B. Sail Controls

Sail controls are the lines or mechanical adjustments that a sailor uses in order to change the features of a sail and to change its power. Essentially, sail controls are used to control and adjust sail shape and angle of attack.

Mainsheet Controls

Here are some basic descriptions of mainsail controls. They include some teaching tips and techniques to help your students understand and remember what the various controls do.

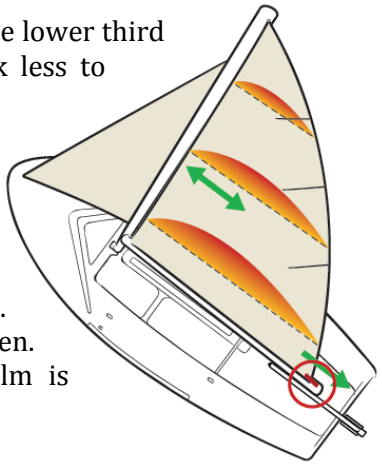
Mainsheet

The mainsheet controls angle of attack of the main to the wind and is the primary control for leech tension. Remember, leech tension directly affects the ability of a boat to point closer to the wind.

- *Mid-boom sheeting*: Sheet tension affects leech tension and forestay tension.
- *End-boom sheeting*: Sheet tension affects leech tension to a greater degree than mid-boom sheeting by pulling down on the outboard end of the boom and forestay tension.

Outhaul

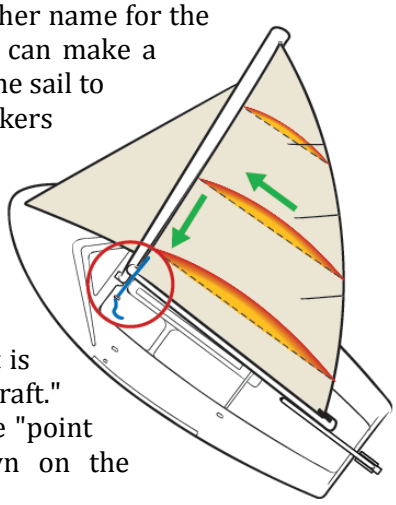
The outhaul pulls the sail *out* along the boom. In addition to making the lower third of the sail flatter, it allows the lowest batten to "open up" or hook less to windward.



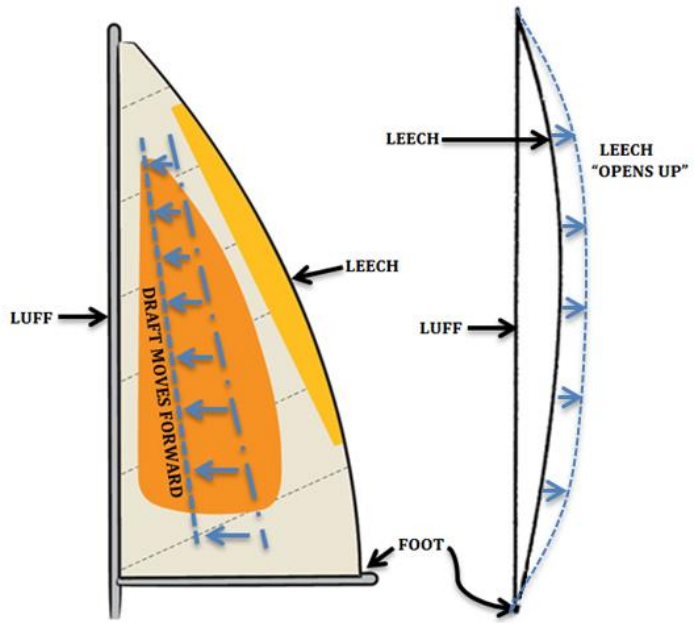
To demonstrate this, put the four fingers on your right hand together (with your thumb upward like a mast), flatten out your palm and point your hand directly away from you towards your students. Put a dry erase marker between your third and fourth fingers, parallel with your fingers and protruding about one inch. Slightly cup your palm. That's the sail with the outhaul eased -- the marker is the lowest batten. Have your students watch the batten as the sail is flattened (palm is straightened). The marker will hook less and point straight back.

Cunningham/Downhaul

The Cunningham (named after the inventor of the control) is just another name for the downhaul. Pulling down on the forward (luff) edge of the mainsail can make a dramatic change in the location of the draft in the main thus allowing the sail to become more efficient in a wider range of wind strengths. Sail makers typically put grommets above the tack of mainsails allowing sailors to run lines through them and easily adjust luff tension and draft location.



Pulling the downhaul/Cunningham on will tighten the luff and create a vertical "gutter" near the front of the sail. Because the leading edge of the sail is attached to the mast, the cloth on the aft side of the mast is pulled forward. Earlier we learned that the depth in a sail is its "draft." When the sail cloth is pulled forward, the deepest area of the sail (the "point of maximum draft") moves forward too. Therefore, pulling down on the downhaul moves the draft forward.



When the draft moves forward, the section of the sail nearer the mast gets deeper and the section near the leech gets flatter. This is most noticeable near the top of the sail where there is less sail area. Remember in the marker demonstration for the outhaul the aft edge of the sail got flatter (as the outhaul went on) making the batten "open up" or move to leeward. Similarly, pulling down on the downhaul/Cunningham reduces draft (particularly up high in the mainsail) and has the effect of opening the upper leech/batten.

TEACHING TIPS: Position your students behind a boat so that they are directly "in line" with the boom. Dramatically pull on the cunningham. As the draft moves forward, have them watch the top batten ease open to leeward. Release the cunningham. As the draft moves aft, have them watch the leech hook to windward.

Full Length Battens

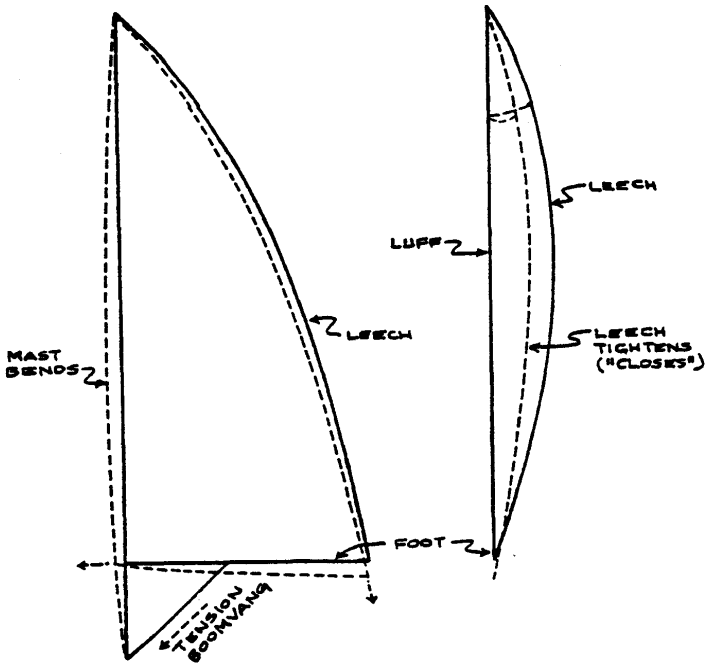
Some boats have battens that extend from the luff to the leech of the main. These are called compression battens. The depth of the sail can be altered depending on how tightly the batten is compressed into its pocket. This can dramatically be shown by letting your students hold a batten between their palms and moving their hands toward each other. The more the batten is compressed, the more it will curve and force more draft into the sail. Some boats will have a single full length batten in the top pocket (like a 420, 470 etc.). Others, like catamarans or big roached mainsails, may have full length battens throughout the sail.

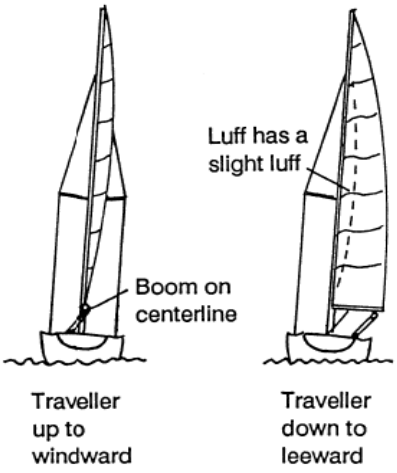
Power-Up	**Depower**
Fuller sail shape adds power	Flatter sail shape reduces power
Increase batten tension slightly	Reduce batten tension slightly

Boom Vang

The boom vang affects leech tension and mast bend, directly affecting sail shape. The vang when tensioned pulls down on the boom while pushing forward on the gooseneck connection of the mast. The result is that the leech tightens (closes/hooks to windward) and the mast bends forward forcing the sail to flatten.

When there are strong, steady winds and sailors are overpowered, knowing how and when to "vang sheet" becomes important – that is, use the boom vang to control leech tension while easing the mainsheet in the puffs for control. Proper adjustment of the vang might be the most important adjustment in performance Boathandling. Reminding your students of their vang settings as the conditions change will help them have proper boat control.





Traveler

The traveler is a control consisting of a track and car that the mainsheet block is attached to or a bridle and two cars. The traveler is used to:

- Controls the angle of the mainsail to the wind.
- Allows the sailor to set the boom on centerline in order to achieve an efficient and powerful close-hauled sail set up. This is done by moving the traveler car to windward until the boom moves to the center of the boat.
- Depower the mainsail when sailing close-hauled and on close reaches by easing the traveler car to leeward without changing the leech tension and the ability of the boat to point.

Bridle

The bridle is a set of control lines that are attached to the mainsheet block and allow the sailor to control the boom in relation to centerline (it is used instead of a traveler). By adjusting the length of the bridle side lines, the sailor can optimize the boat's ability to point by having enough leech tension through mainsheet tension when the boom is on centerline. In lighter air, the bridle lines will be longer to permit the boom to stay on center without too much leech tension. As wind velocity increases, the bridle should be shortened to permit more mainsheet trim/more leech tension while keeping the boom on/near centerline.

Mast Rake – Rake describes the angle of the mast relative to its vertical position in the boat. It is measured by hoisting a tape measure to the top of the mast and measuring to the deck/transom shear line. Rake changes the Center of Effort (CE) of the sails, which directly affects the balance of the boat. More explanation of CE will be covered in the workbook section on Boat Balance.

Light Air	**Heavy Air**
Move mast butt aft, which moves the top of the mast forward	Move mast butt forward, which moves the top of the mast aft
Ease shrouds/"pins up"	Tighten shrouds/"pins down"

Mask rake is specific to the type of boat that is being sailed. Dinghies set up very differently than keelboats, as do boats that have backstays. Go to the specific class tuning guides for the boats your students are using to find out what the experts in the class recommend as a starting point for rake.

Mast Bend – Mast bend describes the fore/aft deflection of a mast from straight. Mast bend affects sail shape and is used to power-up or depower a mainsail. Mast bend is controlled by:

- Rig controls: shrouds, spreader angle.
- Sail controls: Boom vang, main sheet, and backstay.
- Mast section (shape and taper of mast).

Increasing mast bend (the deflection of a mast forward) will reduce draft and flatten the mainsail, thus depowering it. It will also tighten the forestay.

Decreasing mast bend (straightening the mast) will increase draft in the mainsail making it fuller thereby powering it up. It will usually ease tension on the forestay.

Backstay/Topmast – The backstay is a wire or line control that extends from the top of the mast to the transom through an adjuster system, usually block and tackle. It is used to:

- Control the shape and leech of the main, and thereby add or reduce power.
  Ease backstay for a fuller mainsail and tighter leech. Pull on backstay to bend the mast particularly at the top to flatten and depower.
- Control the shape of the jib through head stay tension or sag.
  Ease backstay to increase sag in jib luff to make the jib fuller and have more power.
  Tighten backstay to reduce sag to make the jib flatter and enable the boat to sail a little closer to the wind.

Jib Controls

It is important that sailors understand that the jib is equally as important as the main, even though it is usually smaller in size. The wind hits the jib first and if the jib is trimmed improperly the main is unable to generate maximum lift and efficiency.

Jib Halyard
If the tack of the jib is fixed, then the halyard of the jib acts like the downhaul on the main does. Pull the halyard up tight and you will see the "gutter" start to develop. If the halyard is too loose, you will see large wrinkles in the luff of the jib or may see large "scallops" between the fasteners holding the jib onto the head stay.

For dinghies with forestays and luff wires, there are several things to note:

- If the mast is inverted (the middle of mast bows aft), there is way too much halyard tension.
- If the rig is sloppy and bounces around, there is not enough tension and the mast could pop out of the mast step or the partners if you capsize.
- To gauge proper tension, pull on halyard until the rig is firm. This should allow for some movement in the shroud with some applied pressure (light air setting). As the breeze increases, add more halyard tension to increase luff tension in the sail (forestay will be very slack) until when it's windy, you reach the point of inversion.

Jib Cunningham
If the jib is rigged with a Cunningham or downhaul adjustment, it behaves exactly like that on the mainsail. It helps control the draft of the jib.

Jib Luff Sag
Controls jib shape. To *power up*, ease halyard to increase luff sag and fullness of the jib; to *depower*, tighten halyard to reduce luff sag and flatten the sail. Remember, the backstay also will affect luff sag since it tightens the forestay.

Jib Lead Positions
Jib lead positions are adjusted to accomplish the following:

- Control jib's angle of attack.
- Control shape and twist.
- De-power and power up the sail when sailing upwind in various conditions.
    - Lead aft depowers by flattening the foot and twisting open the leech.
    - Lead forward powers up by making foot fuller and closing the leech.
- Control sail shape and angle on reaches (lead out and down).

If the jib is properly designed, the jib lead can be positioned so that all three telltales are streaming back (indicating proper angle to the wind from head to foot).

If the jib lead is too for forward, the bottom the lower telltale will- flutter first, the leech will be tight, and the foot will be full. Move the lead aft until all three telltales start to flutter at the same time.

If the jib lead is too far aft, the top telltale will flutter first. The leech will be twisted off, and the foot will be flat. This position is sometimes used to de-power the jib in strong air.

To help students remember what happens when the jib lead is moved forward or back, tell them that the jib lead acts like the main outhaul. Move the lead back and the bottom of the jib gets flatter while the leech gets looser; move the lead forward and the bottom of the jib gets fuller and the leech gets tighter.

Demonstrating All of the Sail Controls

It is best to demonstrate all of these controls on land on a day with a nice, constant breeze blowing so that your students can actually *see* the effect a particular control has on the shape of the sail. It is most effective to exaggerate the adjustment of the control – go from very loose to very tight to see a dramatic change in shape. Make sure you have practiced this with each type of boat and sails you are going to be using so that YOU can see the changes you are going to describe. It is best to use sails that are as new as possible so that the shape has not been stretched out from overuse. Choose a sail control, have them predict what the effect of an adjustment will be and then make the adjustment. Make sure they are standing in a position to be able to clearly see the action of the control and the reaction in the sail. (To see the effect of outhaul or vang on leech tension, position student directly behind the boat in line with the leech of mainsail). Do this with all of the controls you wish to demonstrate.

You can also have the sailors observe the effects of sail controls when on the water. You may have the opportunity to take a student or two in your safety boat to watch their teammates sail. Position yourself directly astern of a boat and then have the sailors in the boat make some sail control adjustments. Have your students pick the controls to be adjusted and point out the affects.
There is no better way to see the cause and effect of sail control adjustments than to do this demonstration in a controlled environment. Depending on the conditions, you can demonstrate the extreme range that a sailor can make adjustments through. Because you are doing this in a stable, controlled environment, the students do not have to worry about sailing their boats while making the adjustments. Many sailors do not understand fully what the effects their adjustments are having on the sail because no one has ever taken the time to "train their eye" to see what happens to the shape of a sail as an adjustment is made. Too often a sailor will look at the line they are adjusting and not at the sail to see what change has occurred even though they may be able to tell you "what the book says."

NOTE: This demonstration is arguably the most important one that you can do with your students on land. It will establish a solid foundation for sail trim/control adjustments that will benefit the sailors for the entire sailing career. Teach it well in the initial stages, and you will save yourself and your student's unnecessary repetition later. It is absolutely essential that you run through this demonstration yourself *before* you teach it to your students. You need to make sure that you understand and "see" the actions and reactions that happen as you make adjustments to the sail. If you do not fully understand what you are showing your students, then your credibility will suffer and you will lose the attention of your students through this demonstration. This demonstration can be done with every kind of boat with any kind of sail and should be. A good way to reinforce this is to go sailing after the demonstration and video or take pictures of them going through the sail controls. Showing the actual student doing the controls and seeing the effect will have a big impact.

C. Sail Trim

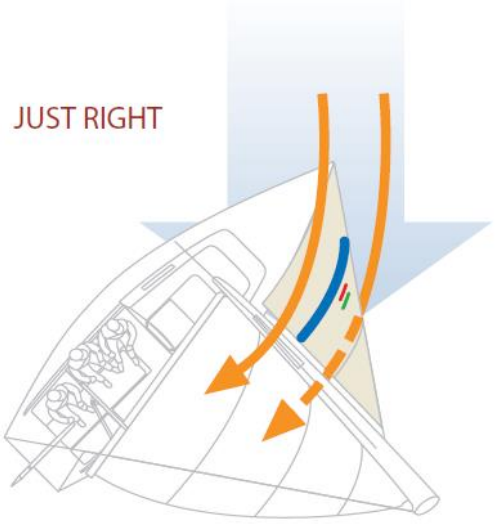
Mainsail and Jib

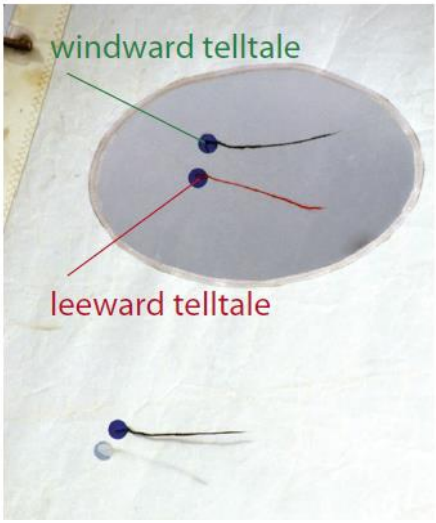
Most sail makers will have a tuning guide for the sails they produce. Anyone can get tuning guides online or directly from the sail maker. Intermediate and advanced sailors should be encouraged to get a tuning guide for the brand of sails that is on their boat. If your program uses club owned boats, you might make copies of the appropriate guide for each of your sailors or use this as an opportunity to have them do the research themselves. A good way to simplify the tuning guide is for you as the instructor create a blank tuning guide with categories like light, medium and heavy air and have the sailors fill them out as you go over the sail controls and boat setup.

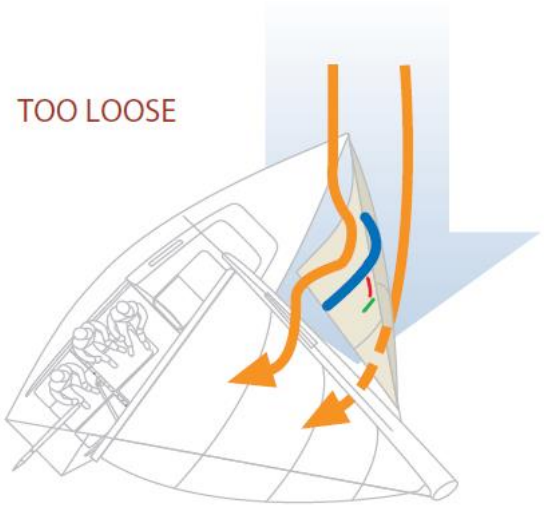
Remember it is possible that there may be several different brands of sails among your students. Tuning will vary slightly from sail maker to sail maker. Teach your students how to use a tuning guide and how to make the appropriate measurements and adjustments to their rig set up and sail trim. There is no need to "reinvent the wheel" when setting up a one-design boat. The experts have already done a lot of R&D to come up with the numbers that will immediately put a sailor "in the ballpark." For more detailed information talk to the class experts, invite a sail maker to your program for an afternoon, watch the fast sailors sail and note what they are doing. Within your team, discuss how the fast boats are set up and encourage the others to set up in a similar way. Start a tuning chart with your group by logging in the settings of the teams that are going fastest in each practice, especially for many different wind conditions and sea states. Then the team can compare it to the official tuning guide and see what they can determine.

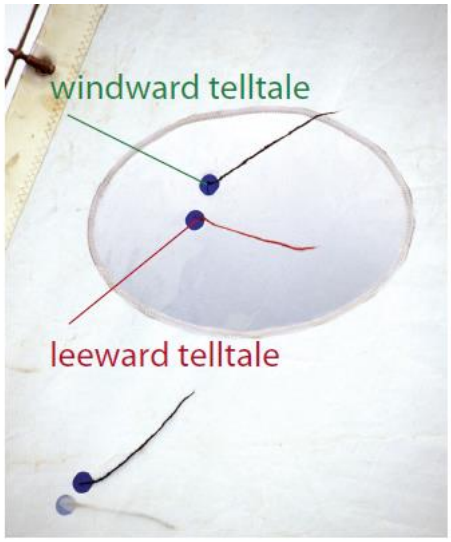
The Main and Jib relationship (The slot)

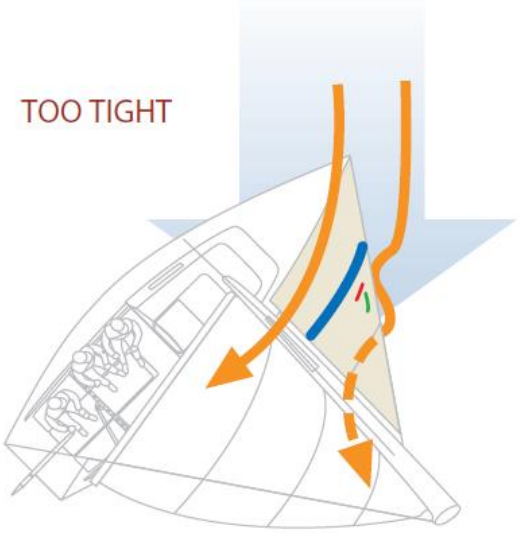
A main concept for your sailors to understand when it comes the sail trim is the slot. The slot is the space between the Jib and the Main, sometimes the jib is bigger and overlaps the mainsail and some times the jib is smaller then the main and will not over lap. Regardless of the size of the jib this space, or slot is very important to keep the boat moving forward and under control. The more open the slot or space the more power will be generated so in lighter air or in choppy conditions having the slot more open helps keep the boat powered up. The tighter the slot the better the boat will point. A common mistake for intermediate sailors is that they will learn to ease their main in breeze to depower or control their boat. What they won't realize is that if they ease their main and keep it out without easing their jib the boats slot will be closed off and the boat will become unbalanced. This is a common mistake in breezier conditions where the main will stay eased for longer periods of time.

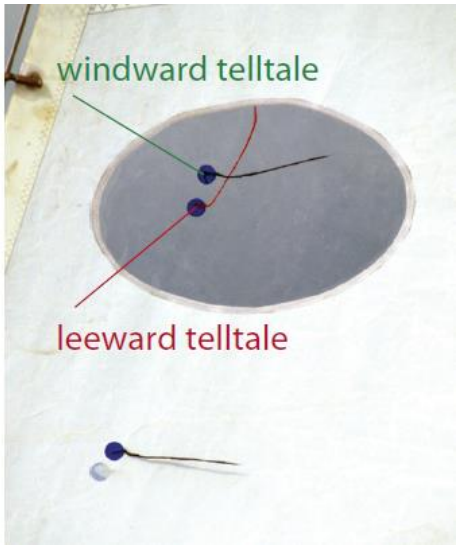












Telltales

Wind indicators such as yarn or nylon strips that are attached to the luff and leech of a sail are called "telltales." They are very useful tools in helping to get sails trimmed just right. They are usually 5-7" pieces of light yarn, cassette tape, or narrow nylon strips. Generally, they are attached in three places on the jib: 1/4, 1/2, and 3/4 of the way up the luff approximately 6"-8" back from the most forward edge of the luff. There should be one just below the top batten of the jib on the leech. Another common place for telltales is on the leech of the mainsail up near the top batten and possibly at the second batten from the top. If the boat only has a mainsail, place telltales generally 1/4 of the way up the luff and about 12"-15" back from the luff edge of the sail. Once attached to the sail, if sprayed with McLube, they will tend not to stick to the sails in wet conditions.

Use (luff) telltales to trim a sail

When trimming the jib or main on any point of sail other than close-hauled, teach your students to continually ease the sail(s) until the inside (windward) telltale starts to lift or bounce around. Then trim just a tad until it flows along the sail. Then repeat. If the back (leeward) telltale ever droops or lifts, teach them to ease the sail immediately. One rule of thumb is to have the telltales flow in a sideways "V" pattern with the leeward telltale parallel to the deck and the windward telltale lifting up into a "V."

Use the leech telltale

The telltale on the upper leech (near the batten) is a reference for leech tension. As a general rule, if the telltale is continually drooping down, hiding behind the sail, and never streaming aft, the leech is too tight/closed – ease the sheet. If the telltale flows aft all the time, never droops down or "hides behind the sail," the leech is too loose/open – trim on slightly until the telltale stalls/hides about 25% of the time.

Use telltales on your shrouds

A common place for telltales are on your shrouds a little above eye level. These telltales can help you downwind seeing the angle to the wind relative to your sail settings. If the telltales are pointing behind you then your point of sail is a run. When the telltales are pointing beside you, than you're closer to a reach. It is good to have these telltales to teach proper sail trim with each point of sail.

Spinnaker

Spinnaker trimming is an art that is not taught as frequently as mainsail and jib trim. Most instructors are psyched just to have their students be able to get the spinnaker up and down with a minimum of problems. However, learning good spinnaker trim early is advantageous to sailors as they continue their sailing careers.

Spinnaker Pole

In general, the spinnaker pole should be set so that it is perpendicular to the apparent wind direction shown by a telltale tied to the side stay, a telltale on the toping lift or on the mast head fly/ indicator. The height of the pole should be set so that the two clews of the spinnaker are set at an equal height.

Common errors when adjusting the pole is to set the pole too high or too low. If the head of the spinnaker is flowing straight out from the mast (horizontal), the pole is too high. If the top third of the spinnaker curls over when the sheet is eased, the pole is too high. If the spinnaker is bouncing and "wandering" all over the place, the pole is too high. If the leading edge of the spinnaker is tight and curls over instantly at the slightest ease on the sheet, the pole is too low.

Spinnaker Trim

In general good spinnaker trim will involve both the sheet adjusting the spinnaker trim and the guy adjusting the pole. The sheet should constantly be moving to adjust the curl of the spinnaker and the pole should be adjusted to set the attack angle of the windward leech. As the skipper adjusts the course of the boat or as the wind shifts the guy and sheet will need to be properly trimmed. It is

a good idea to set your sailors in a drill to adjust their spinnaker trim in many downwind points of sail to learn the proper adjustments.

On reaches, the spinnaker should be fairly flat with an open leech on the leeward side. If the foot gets very tight (close to the forestay) when the sheet is trimmed consider easing the pole forward a tad.

However, the pole should NEVER be touching the forestay (this overloads the forestay with pressure, and allows the pole to inefficiently point to leeward). A good rule of thumb is to mark the spinnaker sheet at the cleat for tight reaching when it is being used as the guy.

On runs, the idea is to expose as much of the spinnaker sail area as possible to the wind. The most common error is to have the pole too far forward and too high. If the spinnaker has a deep belly in it, especially down low, the guy is too far forward. Conversely, if the foot of the spinnaker is touching the head stay or if the spinnaker collapses at the slightest ease on the sheet, the guy is too far back.

If the spinnaker collapses encourage them what angle the wind is coming from using telltales or mast -head fly and have them adjust their trim accordingly. The use of telltales and/or mast -head fly is key in learning the fundamentals of proper trim.

Still shots and video replay are excellent for letting sailors see how they are trimming their spinnakers. Having students actually watch their teammates sailing with spinnakers and pointing out examples of good and bad trim is fantastic. Let them point out examples to you, and have them offer suggestions to the sailors on how to make spinnaker trim better.

D. Underwater Surfaces

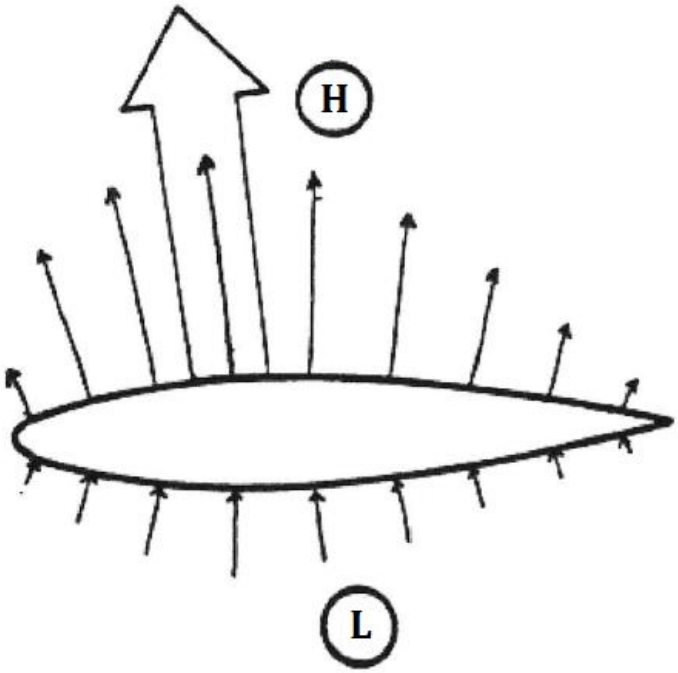
The first half of how a boat is propelled forward was covered in Section A: Sail theory. The other half of the explanation for *how* a sailboat is propelled forward lies under the water. Far too many sailors underestimate the importance of their boat's underwater foils (i.e. centerboard, keel, rudder, dagger board). The fact that they are much smaller than the sails has no bearing on their importance. Often times the difference between being fast and slow is the shape and condition of these underwater appendages.

Basic Foil Theory

The concept of high and low pressures on either side of the centerboard/keel is central to sailing efficiently. The centerboard/keel creates "lift" in much the same way that a sail does. When a sailboat is sailing upwind, it is continually slipping slightly to leeward. Therefore the water is hitting the centerboard on the leeward side first. The water flows over the centerboard in similar fashion to the way air flows over the sails.

The windward side becomes the *low* pressure side; the leeward side the *high* pressure side. High pressure (leeward side) wants to move toward low pressure (windward side). The result is a force to windward lifting the boat upwind.

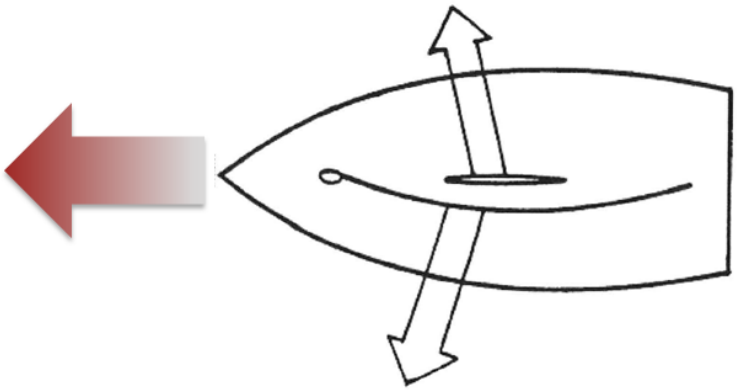
Lift Generated by the Centerboard



When the lift of the sails is combined with the lift of the underwater foils, the result is that the boat goes basically straight ahead. (In actuality, a sailboat always goes just a tad sideways.) When the underwater foils are not optimized, the flow is not perfect, and the foils develop "drag" through the water. This drag reduces the amount of lift and the boat slips more to leeward.

Combined vectors from lift generated by sail and centerboard

TEACHING TIP:
Use a bucket with three lines attached. Have students pull from different angles and watch the bucket move forward.



Importance of Surface Condition

If the foils develop any drag at all, they quickly reduce the amount of lift the foil generates. Therefore it is critical to keep the foils as smooth as possible. Be sure the foil is wet-sanded smooth, kept clean and polished. It is good to teach your sailors to care for the foils early on so they understand the importance of the underwater foil.

Centerboards and Their Controls

A centerboard pivots on a central pin that allows it to be raised and lowered. There are a variety of different systems for raising and lowering the centerboard. It is important that the system works easily, and that the board can be safely secured when raised. It can be dangerous and slow to have the board accidentally come crashing down on a run. Some dinghies have preventer lines that, when cleated, keep the board stable and prevent it from falling down into the board well in the event of a capsize.

Dagger boards

Dagger boards are different from centerboards though they serve the same function but operate in a slightly different way. Dagger boards are simply raised straight up or lowered down in their trunks. They are usually stabilized when raised by a length of shock cord that can be attached forward to the bow or to the mast. A dagger board can be pulled all the way out of the hull.

Centerboard/Daggerboard Positions

Just as the sails are trimmed in and eased out depending on the boat's point of sail, the centerboard is trimmed the same way. As a general rule, you don't need to require your students to adjust the board with every small adjustment of the sail(s). The board adjustments are more gross while the sail adjustments are more fine.

The general rule of thumb is:

- When the main is trimmed *in* all the way (close-hauled), the board is all the way *down*.
- When the main is eased *out* all the way (on a run), the board is most of the way *up*.
- When the main is halfway out (reaching), the board is halfway up, and so on.