

C420/420s specific

FJ specific

Skipper specific

Crew specific

TABLE OF CONTENTS

Rigging / Tuning	2
Checks Before Leaving Dock	2
Rigging Checks:	2
Tuning Checks	2
Starts	4
Pre-start Routine (after leaving the dock but before the first warning)	4
Pre-race	4
Crew Jobs	5
Accelerations	5
Boat Handling	7
Roll Tacks	7
Roll Gybes	8
Mark Roundings	11
Windward Mark	11
Leeward Gate	11
Weight Placement	12
Trim	13
Light/Medium Breeze	13
Heavy Breeze	13
Sail Twist vs Controls	14
Tactics/Strategy	15
Capsize Recovery	17
Communications	18
Race evaluation	19
Resources:	20

10 THINGS THAT REQUIRE 0 TALENT / A COACH

1. Being on time
2. Work ethic
3. Effort
4. Energy
5. Attitude
6. Passion
7. Being coachable
8. Doing extra
9. Being prepared
10. Body language



Rigging / Tuning

Checks Before Leaving Dock

1. Shrouds taped (no redress if pins pop out)
2. Main all the way up
3. Halyards cleated properly, no battens missing
4. Jib and main halyards clean (not going to get twisted up during the race)
5. Knots in end of jib sheets/knots at jib if continuous
6. You have your bailer and tied or clipped to the boat/Autobailer closed
7. Every control line is stopper knotted
8. Bowline is tied on the mast(under the jib sheets and above the vang)/bow line properly tied to the bottom of the mast and ends stored away
9. Bring snacks and water bottle, put on sunscreen and sunglasses, hair is tied if in the way

Rigging Checks:

- The excess jib halyard is coiled and stored away
- The excess main halyard is coiled and stored away/cleat hitched multiple times
- The main halyard does not go through the block at the bottom of the mast-goes through the eye of the cleat
- Jib sheets are tied to the jib with small bowlines so they offer more feel of the jib(continuous)

Tuning Checks

- Jib Tension
 - Leeward shroud should break about 1 inch when main is over trimmed
 - Use the top block of the jib halyard purchase as a reference for how much you have tightened the tension
 - Sometimes you will have to wrap the halyard under the cleat and kick the mast forward in order to get enough tension(on the water adjusting)
- Jib Cars
 - usually sailed with 3 holes showing from the back
 - Make sure these are even on both sides
 - Move the cars forward for power (light wind or chop) and move the cars back for speed/flatness (heavy wind or flat water)

- Weather-sheeting
 - Adjust the clew of the jib to open the slot
 - Put on a lot in heavy wind and light
 - Front leg bent, use back foot to put on through the cleat if on the wire
 - Don't do it for medium wind
- Vang
 - In puffy conditions the crew must play the vang (especially in 420 since the vang likes to be played a lot more; *the skipper should pay attention to vang* as well since they can see the leech clearer)
 - In 420s, make sure the vang isn't too loose when on a reach. It's really easy to capsize that way.
 - Upwind
 - Vang should be completely slack until crew has to sit on the rail
 - After that snug the vang and continue to do so as breeze increases
 - Vang should never be more than snug in FJs until 20+ knts (although this depends on the weight of your boat)
 - Downwind
 - Vang should be on enough to keep the top batten parallel with the boom
 - Reach
 - Vang should be slack but not entirely taken out
- Outhaul
 - *Skipper will usually say how much outhaul needs to be put on*
 - Sometimes you need to grab the outhaul from behind the cleat and pull away from the boom to get enough on
 - Too much and you won't be able to point
 - Only ease it on downwind if you are sure you will be able to get it back to its fast point on the upwinds, or don't take the slack out of it entirely
- Cunningham
 - Goes on if overpowered, off if underpowered
 - Don't put on too much since you will lose pointing ability
 - Ease on downwinds in all conditions

Rig Tension/Rake

- Can't adjust pins in college, can adjust rake by using jib tension

Starts

Goals

1. On Line
2. Full Speed
3. Close Hauled
4. Near favored end

Pre-start Routine (after leaving the dock but before the first warning)

- Upwinds
 - Practice transitions and maneuvers if it's puffy and shifty
 - Focus on boat speed if the wind is consistent and steady
- Check Gates and go over the courses
- Practice Accelerations
- Head to Wind and check angles
- Line sight
- Adjust Tuning if needed

Pre-race

- 3 Minutes
 - Talk about game plan and priorities
 - Check time & distance(how much time needed to get from the full stop to full race mode from certain boat lengths under or on the line)
- 2 Minutes
 - Talk about favored end and final game plan call
- 1 Minute
 - Setting up on the line
 - Bail out Call(Sudden changes to game plan, needs to port tack etc)
 - Crew starts counting down outloud
- 30 Seconds
 - Bow Check(are we over the line)
- 20 Seconds
 - Controls on
 - Double tack if necessary
- 15-10 Seconds
 - Acceleration call

Crew Jobs

- Look for breeze up the course
 - Alert skipper of any puffs or shifts up the course
- Countdown
 - Have watch set and update skipper on time
- Call Line
 - Find both sides of the line and tell skipper how many boat lengths you are from the starting line
- Call Boats
 - Watch for Starboard tackers and port tackers coming in the take your hole
 - Use bow numbers to call boats
 - Crews can call windward side poachers while skippers call leeward
- Listen to Skipper about trim and Weight placement
 - Jib trim and weight placement steer the boat. If your weight and jib are contradicting the skipper's main trim and rudder then the boat will park
- Always be ready to double tack or gybe
 - Sometimes the skipper will decide you need to bail from your spot. Seconds matter on the starting line.

Accelerations

1. Big Jib Trim to get the bow down with weight to windward
 2. Help heel boat to leeward and then flatten hard and hike/trap
- Note: you should be communicating with your skipper for the countdown as to when the acceleration is going to happen(Talk about how to countdown so we can coordinate)
 - Sample Video of FJ accelerations, in 420s the movement should be bigger and more exaggerated
 - During final acceleration, keep your mast at or ahead of the windward boat's bow. This gases the windward boat, while keeping your sail numbers covered from the judges on the right.
 - *Listen for ratchets, sheet in gradually as you gain speed(if sheet in too much without speed, you'll side slip)*
 - *Try to be under the line by 1-2 boat lengths(this distance gets smaller as the wind dies) so you have room to accelerate*

- Don't backwind to go backwards on the line because it takes too much time to build that speed and flow backup. Don't unless it's absolute emergency and no other options

Boat Handling

Towing

- Centerboard 60% up
- Main sail down all the way if possible, backwind jib on the upwinds
- Tie bowline on the mast in between the vang with a bowline, and if there are more boats behind, tie their towline onto the bowline in front
- Sit on opposite sides, hold on tight
- *Skippers pay attention to steering*

Roll Tacks

<https://www.youtube.com/watch?v=DZhIT6wDAIq>

<http://zimsailing.blogspot.com/2013/04/dos-and-donts-for-roll-tacking-420s-and.html>

Roll Tacking is probably the most important thing a crew does, and the most important thing is to not lose flow on the sail and the boat. Crew and skipper should be synchronized on the roll with the *skipper being slightly faster with the flattening*.

Roll Tack in 3 Stages

Before Tacking:

1. Entry
 - a. *Skipper calls Tack, turns the tiller(max to the side of the other rail)*
 - b. Take the slack out of the windward jib sheet and uncleat the leeward jib sheet
 - c. Take slack out of windward sheet before tack so its easier to pull in
 - d. Roll with shoulders too and pull with straight arm/whole body not (if you do bent arm your arm will just straighten and bicep is not as strong as whole body movement)
 - e. Keep jib tight and move towards center of boat as skipper steers into wind
 - f. Crew calls Roll (calls it off the backwinding of the jib)
 - g. Hit the windward rail as hard as you can(Shoulder snap/sit on the rail with shoulders out) with the jib still tight/snap shoulders out while body still in the boat if it's light

2. Flatten

- a. Move across boat and flatten hard
 - b. Trim jib to 90%
 - i. The easiest way to only trim to 90% is to grab the windward sheet a few inches off the block. This way, when you hoist over to the other side, you are automatically 90% trimmed.
 - ii. Get weather sheet cleated
3. Exit
- a. Finish jib trim when you hear skipper's main ratchet
 - i. You want to get those last few clicks in together with you starting maybe one click after the skipper.
 - b. Always finish tack where you started it
 - i. If you were sitting in the middle, sit in the middle (and counter the skipper's flatten in light air)
 - ii. If you were hiking hard, hike hard

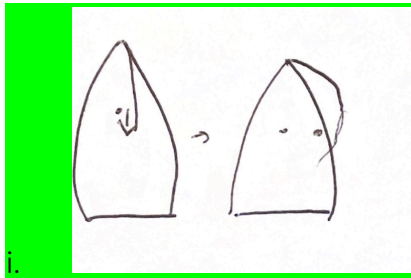
Roll Gybes

Below apply to both [FJs](#) and 420s, even though there is no need to do wing in Club 420s (will work in a collegiate)

Wing to Wing

1. Board down
 - a. Some skippers like to hear that the board is down without having to look so either tell them or make sure it's loud enough that you can hear it. That being said don't slam it!
2. Vang On
3. Crew takes sheet from skipper, grabs lazy sheet through the block
4. Skipper pretrims main, when you hear ratchet, roll to windward
 - a. Roll until the boom starts to come over and then lighten up
5. Once boom is clear help flatten
6. You always come out of the gybe on a reach, so make sure jib stays trimmed on leeward side
7. Help boat turn down by heeling to windward
8. Make sure to put a hand on the boom as the boat turns down, so it does not swing back across
9. The jib will start to come across naturally if your boat is turning down hard enough (which it should be)
10. Once the clew of jib is clear of mast give a big pump

- a. Sometimes the best way to do this is to take the sheet, stand up, and raise it over your head. This will give the jib the pump that it needs and get it filled quickly. "Pop the jib"
- b. Heavier air pull jib sheet back first then guide out then around sidestay (once you pull it back then let it out it will catch air and fill better than trying to pull out sideways for wing)



11. Hand sheet off to skipper
12. Vang Off
13. Board Up

Wing-on-Wing to Reach

1. Vang On
2. Grab both jib sheets
3. Hit Leeward Rail and then lay out across the tank extending arm as far out as possible while grabbing the jib from in front of the block
 - a. Skipper is in charge of flattening here. Be prepared to come up a little bit to help but only do it if you are about to tip or they tell you to. When you do come up don't come up any more than the centerboard or else you'll park your boat.

Reach to Wing-on-Wing

1. Grab both sheets
2. Throw your foot over centerboard trunk and stand up, leaning to windward to turn boat down
3. Make sure to put a hand on the boom as the boat turns down, so it does not swing back across
4. The jib will start to come across naturally if your boat is turning down hard enough (which it should be)
5. Once the clew of jib is clear of mast give a big pump
 - a. Sometimes the best way to do this is to take the sheet, stand up, and raise it over your head. This will give the jib the pump that it needs and get it filled quickly.
6. Hand sheet off to skipper
7. Vang Off

Master of the obvious

There usually should be one person in the boat who will be in charge of being the 'master of the obvious' (If it's a multi-person handled boat, it should be a person who isn't doing much besides hiking. In a double-handed boat, it should be the crew).

As the master of the obvious, you want to be constantly checking everything in your boat. Start with asking the three basic questions: **“Are we sitting forward?” “Are our sails trimmed properly?” “Are we pointing alright?”**

Then, you can move on to boat handling and controls. **“Is backstay on upwinds?” “Is the traveler set properly?” “Is vang on?” etc**

Mark Roundings

Windward Mark

- Most important thing at the windward mark is to keep hiking all the way through the offset
- Round wide and tight
- The Skipper should know if you are going to leave the offset on a reach, **wing**, or gybe.
- *Skipper communicate to crew whether going for a reach or gybe/ask skipper whether going for a reach or gybe*

Leeward Gate

- Goal is for a wide and tight rounding
- Better to put the centerboard down early than late
- *Try to go for the less crowded mark if there is no obvious favored end*
- Avoid the pinwheel(slow down, go behind the inward most boat so you can have more options)
- Pay attention to weight during the rounding
- Weight to leeward is usually better as you will be heading up around the mark
- Rock the boat around the mark
- “Close the door” at the leeward mark(head up a few degrees above close hauled, and bear off before luffing to get inside the other boats)
- Trim the jib in a few clicks behind the main. If the jib goes in too quickly the bow will be pulled down, opposite of what you are trying to achieve.

Weight Placement

Weight Placement is extremely important when crewing.

General Point on Weight Placement

- Sit facing backwards (this gets your weight more forward), if possible, adopt the bathroom squat in front of the centerboard trunk next to the mast
- Skippers can put their leg across the boat on the bench while sitting on the rail in front of the cleat or sit on the bench
- Crew Sit facing forwards right below the vang if in the boat, put legs in front of the bench if not doing maneuvers
- In light air in 420 crew can sit backwards back against the mast to get weight more forward (just don't get caught in the vang when tacking)
- Skippers can put their legs in front of the traveler bar to get their weight forwards more
- Shoulders should match skipper when on rail
- Should be sitting right next to the skipper when on rail- "shoulder to shoulder, cheek to cheek"
- Hike out, not down
- Hike with straight legs, it is about extending off the boat
- Get your head out of the boat to see changes in pressure
 - Countdown to puffs and lulls, adjust your weight accordingly at "1"
"Anticipate not Participate"
 - This is very important. You should be anticipating changes in the boat's heel and adjusting to them before they happen. You want your boat to be flat all the time.
- In a really light breeze get weight forward and low
- In chop move weight back when going up the waves, and down when coming down the waves
- It isn't about being comfortable
- constantly adjusting your weight. Move a little in, a little out depending on how the boat is heeling. If you aren't hiking, you can look at the transom to see if you are flat or not but make sure to still pay attention to wind and other boats. In the end you should be able to feel the heel and adjust your weight to that - even better you should anticipate the heel and adjust.
- Dinghies like to have about 10 degrees ish leeward heel
- Hike out and aft to round windward mark, and step to leeward to help turn up

Trim

Telltails

- Telltales are an easy way to trim your jib/main to a standard position.
- There are some cases you'll want to ease a little off or put some more on but a position where the tell tales are happy is a good starting position
- You'll want both tell tales flying straight and not wiggling, **this is extremely important in a 420**
- **Play the windward telltale, head up until telltales start luffing, and then take it down**
- After you get these set it's best not to do a ton of adjusting as the skipper is using the telltales to advise their steering
- **Have the windward telltale luffing 10%-20% all the time/60-70% in a FJ**
- **If you have too much twist, the bottom telltales will be streaming while the upper ones will stall**
- If your leech telltale isn't disappearing at the back of your sail/streaming back, you're doing something wrong

Foot Mode vs Point Mode

Foot Mode = "Going for power". Sails eased slightly more and boats sailed at a slightly lower angle. Useful in chop and lighter wind. **Usually in a 420 you always want to go for foot mode**

Point Mode = "Going for speed". Sails trimmed slightly more and the boat sailed at a slightly higher angle. Useful in flat water and heavy wind.

Light/Medium Breeze

- Jib trimmed in as much as possible, so long as the Skipper does not lose flow over the foils. **Put on a windward sheet (take the slack out if light)**. Point mode in the puffs, foot mode in the lulls.

Heavy Breeze

- Hike, ease, trim
- When the puff hits, hike out and crack off the jib about 85%, and then trim back in when the skipper trims the main.

- If there's heavy wind, you may not be able to flatten the boat with just your weight which is why you have to use the sail.
- Try to feather, so you don't lose height. Make the heading up in feathering a little quicker and snappier in a 420 because 420s don't like to pinch/round up
- Skippers need to play main a lot more to help the rig stay upright 100% of the time, in FJs, the crew can play the jib a little bit more, but adjust little by little
- On the downwind(Heavier breeze), sit further back(bench or rail) and play the jib a lot more since there is no cleat and you can't lean out on leeward to feel the jib better

Sail Twist vs Controls

Relates to leech tension (open/closed): backstay, boom vang, cunningham, mainsheet

- More twist = open leech = spills out air
- Less twist = closed leech = holds power

Camber

Depth of sail

Tactics/Strategy

- You want to watch for everything going on in the race and relay the information to your skipper
- Skippers should tell you their preference for what they want to know, but tell them everything you see on the course if you can
- Constant stream of information about wind, other boats, and your position on the course
- The skipper needs to focus on keeping up boat speed so they can't be looking all around the course but crews can!
- Watching the other boats closely to anticipate shifts (lifts and headers)
- *If you need to spin, do the gybe first and then tack (gain power and then vibe through tack)*
- *Fight the current first when going upwind, so you sail less distance going towards the mark (horizontal current)*
- Positioning:
 - Oscillating
 - Ignore other competitors
 - Sail the lifted tack and headed gybe
 - One side obviously favored
 - Be bold, ignore other competitors until an obvious advantage
 - Bang corners...when
 - single/persistent shift during one leg
 - Current difference
 - light/dying wind
 - Local conditions ie shore effects
 - None of the above
 - leading out early to get an advantage
 - Consolidating
 - digging back in late to avoid the edges
 - not letting boats cross
 - favoring the middle
 - covering when ahead.

- On the last tack to windward (“banging” corners): CLEAN AIR IS KEY!
 - On Starboard: Aim for being either 1-2 boat lengths on top of layline or being 4 or more boat lengths below layline so you have room to maneuver if being tacked on
 - On Port: Being 4 or more boat lengths under layline. Never go above left side layline because you will then be tacking in the triangle of death area -- might get fouled, no room, things get dirty very quickly

If you want to win, split off from the fleet and take risks, if you want to keep up and not get DFL, sail with the fleet and get clean air!

Capsize Recovery

Person A:

1. *Undo everything on the centerboard case (kicker/vang and cunningham) if able*
2. *if not swim to the bottom of the boat immediately and wait below the centerboard*
3. *Slam auto bailer shut*
4. *Wait for/listen to "READY"*
5. *After righting the boat, hold onto it*
6. *A pull B up/grab onto the hiking straps*
7. *Sail away*

Person B:

1. Uncleat the jib if cleated
2. Throw jib sheets over the boat to A if possible
3. Swim to the bow/stay
4. hold onto the upper hiking straps(Scoopee)
5. Yell "READY" as loud as B can
6. Wait for A to right the boat
7. After righted, climb into the boat and grab hold of the tiller
8. Pull A up
9. Put controls on
10. Sail away

Communications

- Short and sweet(concise) and loud is key

READY(?/!):

- tack/gybe(followed by 3, 2, 1 countdown)
- Capsized, crew has hands on the hiking straps ready to scoop/skipper ready to un-capsize

BOARD UP/DOWN

- Centerboard up/down

SHEET IN/TRIM+how much(clicks on FJs)

- *Mainsheet not block to block to block/boom is not inside the inside rails*
- Jib not trimmed according to hull tape/to tapered and spliced mark/windward sheet is slack

GOING DOWN

- *Pay attention to steering(go down)*

EASE/DUMP

- Overpowered
- Ease main, and then jib ASAP

TELLTALES/ANGLES

- Pointing too high/too low
- *Pinching too high*
- Windshifts

PUFF/LULL

- Followed by countdown

UNDER THE JIB! STARBOARD/PORT TACKER, BOAT NUMBER, HOW MANY

- Blind spot
- Will call out both sides(especially on the starting line for poachers)

OVERLAP! BOAT NUMBER, ON LEEWARD/WINDWARD, MARK ROOM(IF APPLIES)

Race evaluation

Starts:

- Clean lane
- On line(front row)
- Acceleration(gap to leeward)
- Not dictated by other boats/leverage

Windward:

- Tactics
- Speed
- Strategy

Offset

- Passing or lost

Downwind

- Speed
- Angles

Second Windward

- Passing
- Water space

Finish

- Coverage
- In groove(Good VMG)

Resources:

Videos and Channels

[Capsize recovery](#)

James Bond method that actually works at 8:02. Kiwi magic I guess.

[I420 basic skills training video](#)

Very detailed, a lot of different angle shots, streamlined vid. Warning: Very tedious if you watch it in one setting. Also it's for I420s but a lot of the same concepts apply to C420s.

[Rigging a 420](#)

Basically a rigging 101. Play it at 2x speed. Talks about how to rig the spinn. Does not talk about rake which is really annoying but can't really complain.

[Steve Hunt and Sail X\(Sail X Chanel\)](#): Talks about [favored end](#), [Sailing in Breeze](#), [Sailing Towards Mark](#), [Current](#), [Choosing gates on the course](#)

Very clear with the diagrams, solid tips especially with gate and current strategizing, especially the gate one since a lot of times people just go with the flow but it's not the best way to catch up in a fleet.

[UGA Sailing](#): [Starting Strat](#), [Finishing Strat](#), [Knots\(4 basic and cleat hitch\)](#), [Racing flags](#), [Lifts and Headers](#), [Body weight boat handling](#), [Line sights](#), [420s vs FJs](#)

Strongly recommend "Steering without Steering " and Finishing Strategies-especially finishing strats because a lot of the times we ignore that. The racing flag video is nice for people going to regattas with larger fleets(when they have the flags for signals). The videos are very well produced and visually appealing.

[Dinghy Racing Channel](#)

So many videos about theory and controls to watch and improve the overall performance of the boat in all kinds of conditions. The channel is the Royal Yachting Association's channel so it's British, but it's a gold mine.

[World Sailing Channel](#)

I watch the 470s men and women race religiously...this is a cult. But seriously, watch'em for entertainment and you might learn something from watching if you're a visual learner. The commentaries are sometimes good and sometimes bad, and the accents vary, but you have to deal with it.

[College Sailing Channel](#)

All the college sailing nationals races are here...or most of them. Watch for light wind boat handling. They are long, so feel free to skip around or 2x speed for fleet races.

Websites for more racing knowledge

<https://www.sailjuice.com/>

There is a bunch of high performance bigger boat related stuff here, but there's a ton of nice diagrams if you dig through and the podcasts and articles are really interesting.

<https://sailzing.com/>

This is a really nice website for general racing knowledge-the articles about starting/pre-start routine and strategizing with Steph Roble/Maggie Shea(Team USA Olympic 49er FX sailors) are really good. Recommend the videos webinars with them on [youtube](#)

They also have [a series of youtube](#) videos explaining the racing rules and they updated it with the 2020-2024 changes(the most important ones being the exoneration rule and the bow over start/finish line rule). Highly recommend it if you don't want to read/memorize the sailing rule book.

Nice Reading Material/Good Articles

<https://www.sailingworld.com/one-race-at-time>

College sailing/lower performance tactics and strategies. Pretty basic but it's the details that matter. Check out <https://www.sailingworld.com/sailboat-racing/> though, lots of nice articles and the stuff on the America's cup is a gold mine.

<http://slideplayer.com/slide/7000515/>

General team racing 101, Dave Perry's [video](#) is also a good introduction

[Speed and Smarts](#)

A bi-monthly newsletter with racing tips. Subscription but honestly it's pretty worth it. Awesome graphics and explaining. Recent one about the rule changes and reading the wind/shifts

Booklist

[Saskia Clark: Crew to Win](#)

Basically the best Crewing 101 book I've read - Sas is a UK Olympic 470 sailor and she explains all the basic boat handling clearly. Good diagrams and steps so it's good for beginner crews too, doesn't matter whether you're a trapping crew or a hiking crew. There's content about crewing in a 470 and crewing in a skiff(49er, 29er etc), both

asymmetric and symmetric trap and spinnaker systems are covered in the book. Even better combined with existing youtube videos of Sas sailing(the 470s women's races). Also great recommendation for skippers too because you learn to appreciate crews a lot more and can help make their jobs easier if you know how they work