



# Doing the Wally

The Wally is a technique for exploiting wind shifts without tacking.

Tacking costs distance, and sometimes wind shifts don't last long enough to pay off.

Wally is the answer.

The presentation **Exploiting Wind Shifts** lays out the limits of tacking for shift gain.

The problem is that tack loss doesn't always get paid off before the shift ends.

The Wally leverages shifts without tacking.

“The Wally” was invented in Fremantle where the wind shifts were regular, but too short to exploit (there were also significant tactical reasons not to tack).

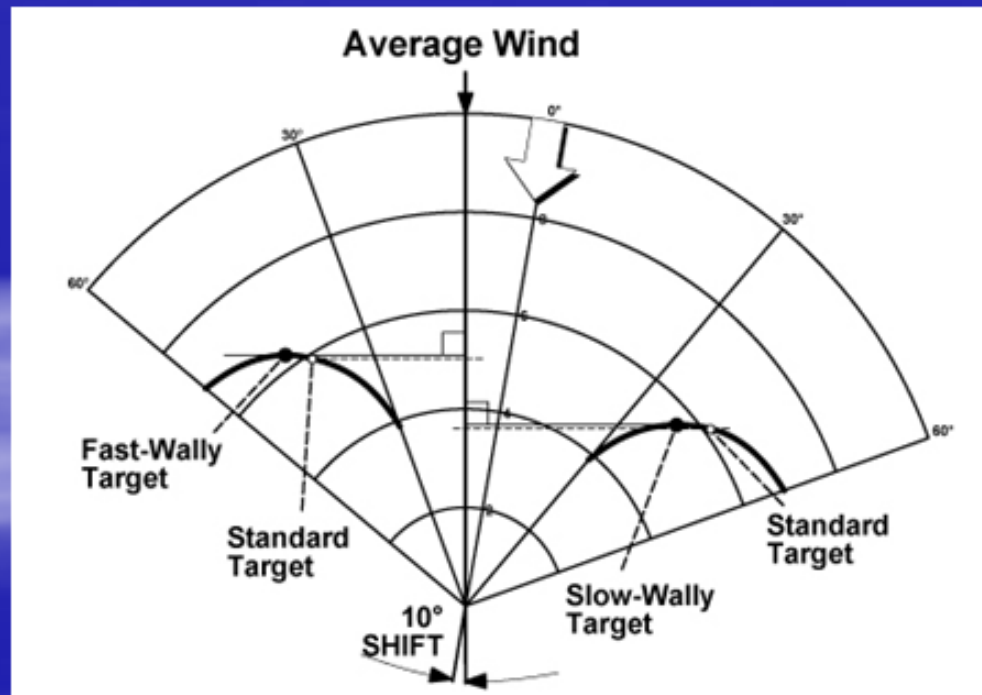
The basic idea is that when the wind shifts back and forth more than once during a leg, you should change the objective to maximizing Vmg up or down the average wind instead of the current wind.

This change of perspective always increases your speed to weather or downwind, and also pumps your lateral separation in such a way that wind shifts always help you and hurt them.

Read more about the Wally: <http://ockam.com/2013/05/02/the-wally/>

## Performance improvement

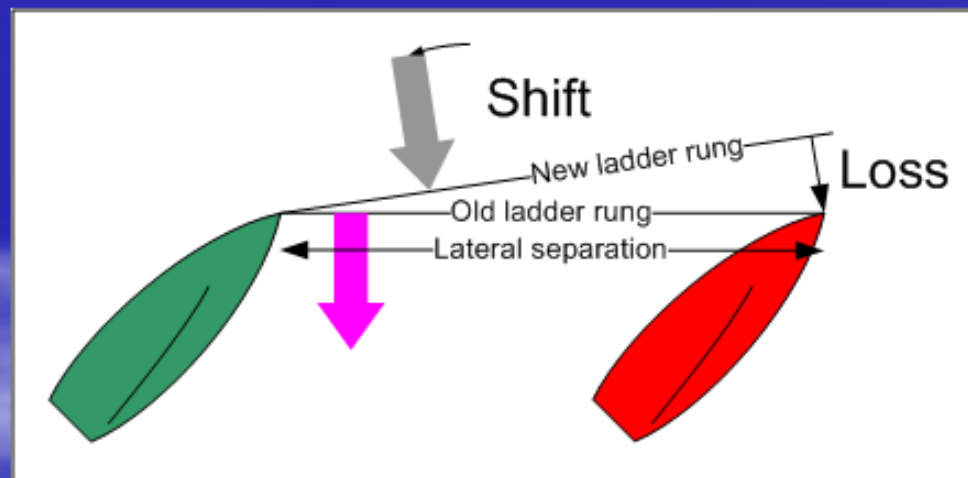
Here you see a polar rotated to align with the wind shift. The standard target points also rotate but there are new target points maximizing Vmg up the average wind. On the lifted tack wally targets are faster than target speed, and on the headed tack they are slower. In both cases you will notice that your Vmg (up the average wind) is better than standard targets. Thus, no matter whether you are in a lift or header, Wallying increases your Vmg relative to standard target speed.



Wallying is typically worth about 5 seconds per mile.

## Lateral separation

Being “On the wrong side of the shift” means that if you are to the right of your competition and the wind shifts left (or vice versa), you lose distance to weather. It has nothing to do with how fast you are, it depends on your lateral separation.



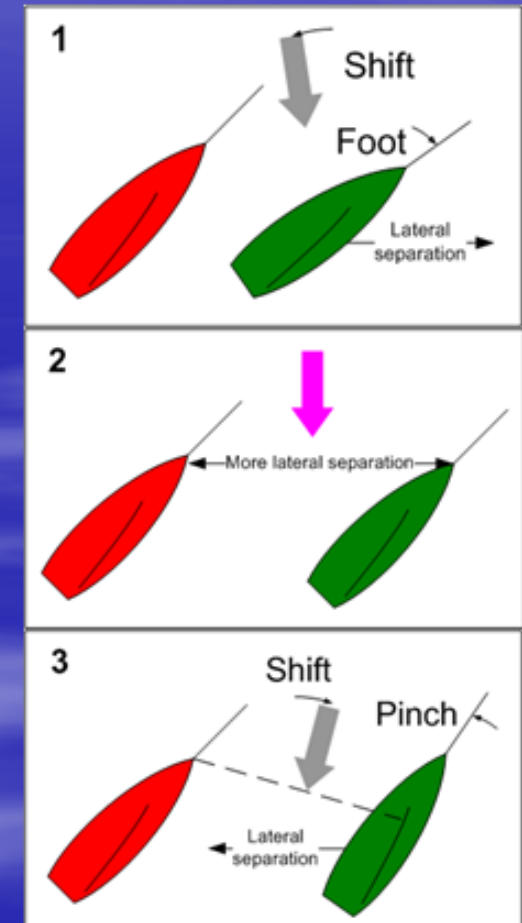
$$\text{Gain or loss} = \text{Separation} * \text{Sin}(\text{Shift})$$

## Pumping lateral separation

1. Green foats on the lift, increasing lateral separation at no cost in Vmg.

2. When the lift ends, Green has increased separation.

3. When the opposite shift happens, Green is ahead due to the increased separation. Now Green pinches in the header so the lateral separation gets smaller, in preparation for the next left shift.



Separation pumping automatically gains on boats to the right as well.

## Practical Wallying

You can determine exactly how much to Wally if you have a polar diagram.

However, if you don't, there is a simple rule of thumb:

**Pinch or foot by half the change in wind direction.**

**For a 10° lift, foot 5°.**

**For a 10° header, pinch 5°.**

It really helps to have a good wind direction solution so you can determine the current deviation from the mean wind direction.

## How to Wally AND tack

Let's say you're sailing in an oscillating northwest wind with shifts lasting long enough to allow tacking.

- As the wind starts to lift above mean, you begin to foot. The greater the lift, the more the foot.
- When the lift hits maximum, you're going your maximum foot.
- As the wind swings back to mean, you begin to return to your target speed.
- When the wind hits the mean, you're at target speed, and you tack onto the new favored board.
- Repeat.

There are two advantages to doing this:

- You're always going faster upwind than you would if you just sailed your targets.
- Your lateral separation automatically changes so you gain more on those on the unfavored side and lose less to those on the favored side when the wind shifts back.

## Super-pumping

You can actually pump separation more than normal if the situation requires it. As you remember, optimal Wallying produces a bit of gain to weather. You can trade in that extra Vmg and pinch or foot more than optimal to change separation a lot faster without losing Vmg.

## Boat on Boat

For boat-on-boat, best Vmg becomes almost irrelevant. What needs to be done is beating the tar out of the other guy.

And for this, lateral separation is the tool of choice.

Lateral separation gain or loss is 2% of lateral separation per degree of shift. In other words, a 5° shift is like a 10% gain in boatspeed! If you only have 1 enemy you can hyper-pump your separation by tacking instead of merely Wallying.

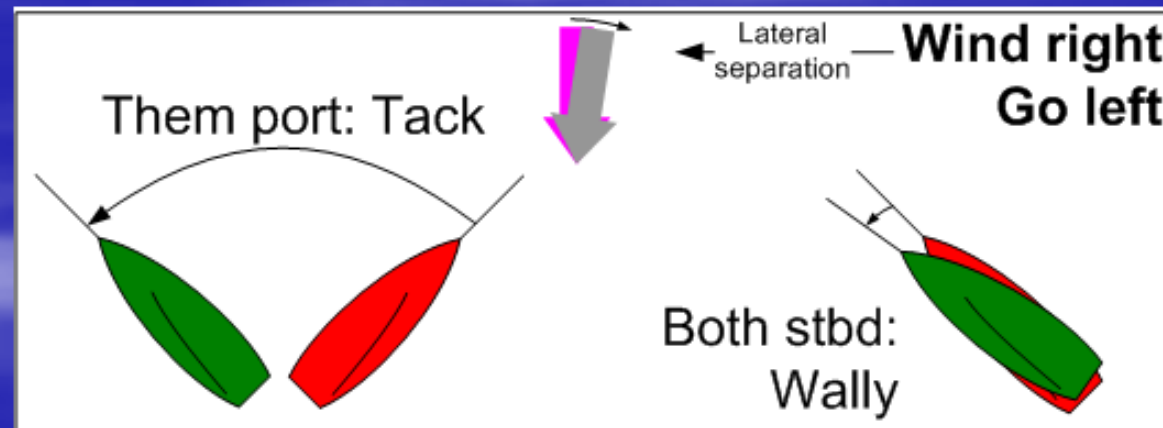
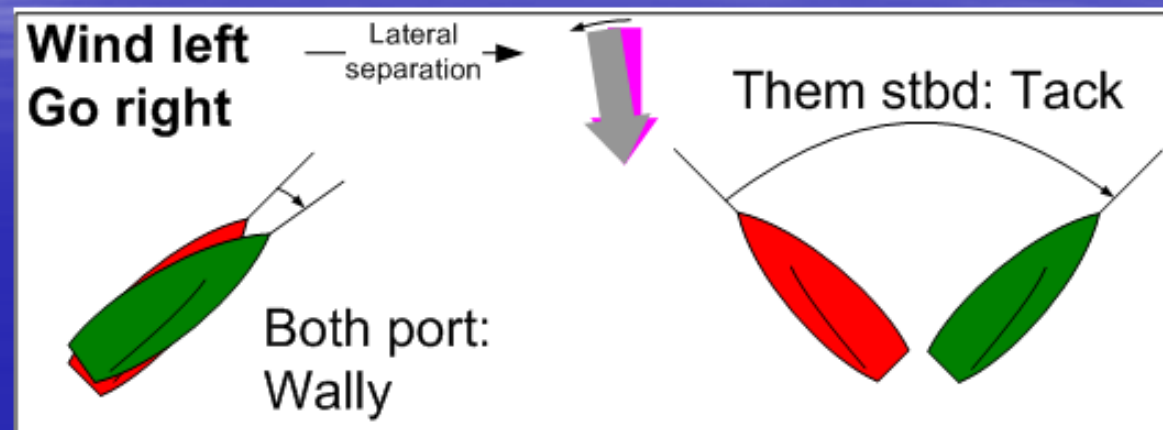
- Wallying pumps separation by pinching or footing without tacking. Separation rate is about 10% of boatspeed, and there is no tack loss to contend with.
- If you tack, separation rate is about 140% of boatspeed, but there is the tack loss to contend with.

## Rules for Hyper-pumping

There is no pinching, and it doesn't matter whether you are right or left of the enemy. The rules are

Wind left of average: Go right. Tack to port if on starboard, otherwise Wally.

Wind right of average: Go left. Tack to starboard if on port, otherwise Wally.



And you might consider super-pumping by doubling your Wally delta.

We have shown that having a good knowledge of the wind and its history can gain you many tens of seconds per mile. Specifically,

- You should not tack on a shift unless you are pretty certain that the shift is big enough, and will last long enough. And we have given you some tools to rationally determine the threshold values for the shift.
- You can Wally when you can't or shouldn't tack.
- You should invest in a good instrument system to give you the inputs that will help you extract performance from shifts.



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Thank you for your attention

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