

## Sailing the Flying Tako

Sailing the Flying Tako is much like sailing a dingy IRL. The skill of the sailor and their ability to use the winds and their skills in combination is critical to sailing it well.

The winds in SL are random and fickle in the extreme. This makes up, to some extent, for the fact that the Flying Tako won't spill you if you make a mistake, although it can also mean frantic work as you try to sail around in the ever-shifting winds.

Sailing, obviously, uses the wind and the sails to propel you through the water. But once you're moving things change a little as momentum will make you tend to keep moving.

Let's imagine you're completely still in the water (just starting to sail say).

If the wind is blowing from straight ahead of you, you won't be able to go forwards, and will, in fact, be blown backwards. In fact if the wind is within 35 degrees of straight ahead you won't be able to gain any forwards impetus from the winds. This gives you a V-shape from which you need to avoid the winds if possible, shown in Figure A.



Now imagine the other situation, the wind is blowing from dead astern (behind you). Obviously you can get forward impetus from this situation: the wind will push the sail and the boat along. The amount of impetus and thus your maximum speed is defined by the angle of the sail to the vessel. You can't control that angle directly, but using the sheets (the ropes to the sail speaking very loosely) you can limit the maximum angle of the sail between +/- 5 and +/- 90 degrees. If you set the sheet to 90 in this situation the sail will also move out to 90 degrees and catch the maximum wind and push you forwards as fast as possible.

Adjusting the sheet angle to keep the sail angle optimal is what will keep you occupied throughout the race. Thanks to the smart way the HUD is configured working out the optimal angle is easy: you want the sail at -1/2 the wind angle. You can get that by keeping the sheet at half the wind angle if you ignore the sign. Actually, because the winds change faster than the HUD updates you will come to rely on your pennant too, the particle stream from the top of your mast that shows the wind direction more quickly than the HUD, but that will come with practise.

You can adjust the sheet angle by saying 'sheet 10' or 'sheet -10' or similar, or by using the up and down arrow keys. Saying sheet and a positive number e.g. sheet 45 will let the sheet out, as will using the up arrow. Letting the sheet out means the maximum sail angle will increase: the sail can point more out to the side. Saying a negative number, e.g. sheet -50 or the down arrow will decrease the sheet angle, limiting the sail to closer to pointing back along the boat.

Although it may appear perverse in fact you sail fastest with the wind at about +/-40 degrees (that's to one side of ahead, but pretty much ahead still) because the curve of the sail in such circumstances creates aerodynamic thrust (at least, In Real Life), which enables you to sail faster than the wind. You don't have to understand that, but it is worth knowing that sailing at about 40 degrees to the wind is the fastest way to sail.

OK, that's the basics, and for general sailing that's all you need. Find one of those nice empty void sims (Balance actually has a public beach where you can put your boat in Balance (250,240)) and sail on it for a while. You can practise reading the wind and its changes and adjusting the sheets and so on without crashing into anything. Experiment to see where you sail best.

There are other factors. If you are racing there is a distinct 'racing line' that you may want to follow, the shortest route around the course. Actually you should be looking for the quickest route around the course, not the shortest. Imagine starting a race into a headwind. You couldn't start along the shortest course, but sailing at 40 degrees to the shortest route will give you the maximum thrust from that wind and you will sail most quickly over the ground. Judging where and when to turn to keep to that fastest course is part of the art of racing. Figure B shows a tacking course which will let you sail fastest along a course into a headwind, with some of the niceties of sailing into a slightly offset wind clearly shown.

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You can, actually, appear to sail into a headwind, and at certain times you may have to if there is a very constricted part of the course. You can achieve this seeming miracle because of momentum. If you are sailing at, say, 2 m/s and you turn to sail into a headwind you will slow down, but you will keep moving, so you can coast through a constricted area into a headwind, or turn across the wind so you sail on the other tack (offset at 40 degrees on the other side) so you sail as close to straight ahead as possible.

Keeping moving, keeping moving quickly, is always an advantage, because when the wind sudden swirls and is against you it gives you a few moments to respond to the changed wind without it being disastrous.

For those of you with a background in physics and engineering it may not surprise you to hear of something called leeway. This is a sideways movement of the boat as the force of the wind on the sail is not totally directed forwards. Many factors contribute to this, wind angle and strength and sail angle being the main two. In most circumstances, especially in sailing in SL, this is not too significant, but when sailing in tight spaces the tendency of the boat to drift sideways results in you have to make another level of continuous adjustments to your heading and sheets.

In a race, as IRL, there is a flying start option. You are allowed to hit the line already moving when the timer hits 0. Of course getting it wrong imposes a penalty, if you cross early you have to turn around and recross the line going

**the right way in order to start your race. Getting this just right is a tricky balancing act, but the two people in the most recent practise race who managed this (at 6 and 8 seconds respectively) placed first and second too.**

**Tips for practise:**

**Start sailing on a nice empty sim, it will help! Play with the controls and experiment to find what suits you best. Once you're used to handling the boat practise sailing on rivers too. This lets you get used to working out how to sail in restricted water whilst still getting places.**

**Remember, however, your dingy is a physical object and will scrape on bridges, buildings etc. In fact it is surprisingly wide at the top: there is a prim up there that you can't see for the HUD, and that can get caught on things too.**

**There is a practise version of the Flying Tako, in which the wind is constant in both speed and direction. This may not be suitable for river travel, but will let you experiment with relating ground speed to wind speed easily, as well as getting used to the controls.**

**<http://en.wikipedia.org/wiki/Sailing> is the wiki page that will contain useful hints, tips and ideas. Google searching will also find many places that supplement their real world sailing classes with web-based resources which can be useful.**