

Competitive 420 Boathandling

Chalk Talk Notes:

Controlling the 420

Factors that contribute to performance boathandling

1. Sails
2. Team weight position
3. Tiller movement
4. Cooperation between driver a crew

Steering

3 ways:

1. Tiller

- a. Controls rudder angle
- b. Disturbs water to change direction

2. Balance

- a. Heel to windward/leeward can balance the boat and sails by aligning the Center(s) of Effort (**CE**) with the Center of Lateral Resistance (**CLR**) in equilibrium
- b. Heel can cause the boat to turn by disrupting the equilibrium with the CE and CLR
- c. The rounded shape of the hull when heeled can also carve the boat through turns

3. Sails

- a. Each sail exerts its own force on the boat, both laterally and forward
- b. It can be fundamentally represented as the jib pulls the bow and the main pulls the stern

- c. Trimming the main and easing the jib will cause the boat to exhibit “windward helm” or the tendency to turn towards the wind
- d. Easing the main while leaving the jib trimmed in will cause the boat to exhibit “leeward helm” or the tendency to turn away from the wind

A note on Balance:

The phrase “Flat” is used a lot to describe how boats should be sailed upwind, but the reality is they generally have a very subtle heel (although some have to be sailed completely flat). The driver often tries to achieve a very small amount of windward helm that is often referred to as “feel”. Allowing the boat to heel a degree or two can in some cases give the driver more feedback about the boat’s balance, and while it may add up wrong from a physics sense, the end result of a driver with a good, solid feel to the boat is very fast. Some one-design boats may allow for tweaking in the balance of the rig to achieve this “feel” or “feedback”.

