Tactics:

The main topics covered here will be tactics for:

- Preparation
- Starting
- Upwind
- Downwind
- Lifts & Knocks
Tactics: *starting preparation*

**Equipment:**

- Get boat and equipment ready well before the scheduled start.
- Arrive at the boat/dock in time to prepare sails and sheets and review weather forecasts.
- Arrive at the starting area well before the start to record wind speed/direction & changes.
- Stop watch
- Pencil/paper
- Hand bearing compass
- Details of marks and courses
- Sailing instructions/Rules
Tactics: **starting preparation**

**Equipment:**

- Get sails and sheets prepared ahead of time
- Get second jib ready in case there is a wind change
- Check sail trim and genoa car position
- Check back stay adjustment
- Check main sail adjustment
- Rub off weed on the bottom of the boat.
- Align propeller (if fixed pitch) with strut to reduce drag
- Move weight out of the bow of the boat (i.e., do not store spare sails in V-berth)
- Input GPS co-ordinates of marks
Tactics: *starting preparation*

**Practice:**

- Before the start practice tacking to speed up tacking procedures
- Practice slow manoeuvring near a mark to improve your boat handling.
- Practice bringing the boat to a stop and holding position
Tactics: starting preparation

weather observations:

- Before the race, check the weather channel for wind forecast etc.
- record wind direction and strength
- look for wind shifts and their frequency (ie take wind bearings at regular intervals to obtain the wind oscillation period)
Tactics: starting preparation
weather observations, recording:

Conditions Prior To Start

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind direction/speed</td>
<td>20 deg. / 10 knots</td>
</tr>
<tr>
<td>Wind direction +/- 90deg</td>
<td>290/110</td>
</tr>
<tr>
<td>Mark BRG/Recip. BRG</td>
<td>30 deg.</td>
</tr>
<tr>
<td>Line direction</td>
<td>300/120 deg.</td>
</tr>
<tr>
<td>Favoured end of line</td>
<td>Left</td>
</tr>
<tr>
<td>Current strength/direction</td>
<td>65 deg.</td>
</tr>
<tr>
<td>Port tack hdg./wind speed</td>
<td>335 deg.</td>
</tr>
<tr>
<td>Stbd tack hdg./wind speed</td>
<td></td>
</tr>
<tr>
<td>Time length of line</td>
<td>45 seconds</td>
</tr>
<tr>
<td>Clock time at start/finish</td>
<td>6:35pm</td>
</tr>
</tbody>
</table>

Wind Cycle

<table>
<thead>
<tr>
<th>Cycle</th>
<th>Back</th>
<th>Veer</th>
<th>Tack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Left</td>
</tr>
</tbody>
</table>

Wind Shifts

- 20
- 15
- 10
- 5
- 5
- 10
- 15
- 20

Time Interval

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Tactics: starting preparation

Crew position:

assign crew specific tasks:

- stop watch / time keeper (could be person on the main)
- flag watcher on the RC boat (could be person on the main)
- bow man to watch for other boats & distance from line
- Jib Trimmer to look for boats to leeward (under the genoa)
- Jib Tailer to look for boats to windward and behind
- compass bearing watcher
Tactics: starting preparation

Crew position: options
Tactics: starting preparation

Crew position: time keeper

- set countdown timer at RC signals
- time length of start line
- read out time aloud at regular intervals.
- Time practice approach to start line
Tactics: starting preparation

Crew position: flag watcher

- watch for flag signals on the RC boat, inform time keeper at appropriate signals  (Note: visual signals and not sound signals prevail).

Warning: Fleet identification flag up : 5 minutes to start
Preparatory: ‘P’ flag up : 1 sound signal : 4 minutes to start
‘P’ flag down : 1 long sound signal : 1 minute to start

Start: ‘fleet’ flag down : 1 sound signal : start

the 5 minute sequence is repeated for the number of fleet starts needed by the race committee and the Club Sailing Instructions.
Tactics: *starting preparation*

**Crew position: Bow man**

- watch for other boats especially right-of-way boats
- determine number of boat lengths to line,
- inform skipper at all times
Tactics: *starting preparation*

**Crew position: Jib trimmer**

Jib Trimmer and Tailer

- leeward trimmer to watch for boats behind the genoa
- ease and trim genoa as skipper changes course
- look for boats tacking who are being lifted or knocked
- windward tailer to look for wind and puffs
Tactics: starting preparation

Crew position: Compass watcher

Compass watcher:
- get bearing on line
- get bearing on wind direction
- get bearing on first mark
- get bearing on close hauled course on each tack
- Get course marks & Set GPS for marks
Tactics: starting preparation strategy:

- Before the start, determine strategy:
  - which is favoured side of course
  - which is best end of line
  - where you want to start on the line
  - where you want to start your approach to the start
Tactics: starting preparation

strategy:

- Pick Right, middle or left side of line
- The middle is usually preferred.
- The ends are only usually favoured if there is a 10 degree advantage
- The ends are usually crowded (so lots of wind shadows from other boats)
Tactics: *starting preparation strategy:*

- Favoured end of line:
  - take bearing of line and compare to wind direction
  - the end that is less than 90 deg. to the wind is the favoured end. (ie start towards left end)
Tactics:  *starting Approach:*

**Methods of approach:**
- Reach out and back *(watch out for crowding at RC boat)*
- Half speed away on port tack and stbd tack return *(tack early to return to get clear air)*
- Full speed away on port tack and stbd tack return *(hard to do because of rest of fleet)*
- Port Tack start at pin end *(usually when pin end heavily favoured and stbd tack hard to make line: be careful as you are give way boat)*
- Luffing approach waiting near line *(usually in big fleets in order to maintain position)*
Tactics: starting Approach:

Methods of approach:

1. Reach out and back
2. Half speed out and back
3. Full speed out and back
4. Port tack start
   - Can be used when left side favoured
   - This can be a dangerous position
5. Luff start (usually in big fleet)
   - Try and leave room to accelerate
6. Triangle start
   - Each side of similar duration
Tactics: *Lifts / Knocks (headers)*

- A lift is defined as the wind direction moving towards the stern.
- A knock is defined as the wind moving towards the bow.

- Upwind: sail the lifted tack.
- If you are being knocked more than 5 degrees tack onto the lifted tack.
- Downwind: sail the knocked (headed) tack.
Tactics: *Lifts / Knocks*(headers)

- Wind shifts are typically more frequent upwind.
- Windshifts downwind occur less often, and may look like a persistent shift due to your own boat speed downwind.
- *If a an oscillating shift occurs every 6 minutes at the RC boat, then going upwind at 6 knots, shifts will occur about every 4 minutes, and downwind over 10 minutes.*
- Try to determine the shifting phase and stay with them.
- Large tactical gains can be made by staying in phase and large losses if out of phase.
Tactics: **Upwind**

Upwind tactics:

- watch for wind on the water, especially on light air days
- check compass bearing for lifts and knocks
- generally sail on the lifted tack and stay in phase with the shifts
- do not sail into the windward mark ‘3-boat-length’ zone on port tack.
- **Play wind shifts** (a 10 deg. shift gives a gain of about 20% of the distance between boats)
Tactics: *Upwind*

**Playing Wind shifts:**

These two boats were equal before the shift and after the shift red has a two boat length lead.

For a 10 deg. shift the gain or loss is equal to about 20% of the distance between boats.

More gains can be made playing wind shifts than most other tactics.
Tactics: **Upwind**

Gain/Loss with Wind shifts:

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Gain/Loss with Wind shifts for distance between boats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30 feet</td>
</tr>
<tr>
<td>5</td>
<td>2.6</td>
</tr>
<tr>
<td>10</td>
<td>5.3</td>
</tr>
<tr>
<td>15</td>
<td>8.0</td>
</tr>
<tr>
<td>20</td>
<td>11.0</td>
</tr>
<tr>
<td>25</td>
<td>14.0</td>
</tr>
<tr>
<td>30</td>
<td>17.3</td>
</tr>
</tbody>
</table>

If you are competing with one particular boat or group, then you need to have good reason to split away from the group since an error could be costly.
Tactics: *Downwind*

Downwind tactics:

- watch for wind on the water behind you, especially on light air days
- check compass bearing for lifts and knocks
- generally sail on the knocked (headed) tack and stay in phase with the shifts
- steer down in puffs, steer up slightly in calms to maintain boat speed
- watch carefully for boats behind you, their wind shadow can extend many boat lengths.
Tactics: Downwind

Down wind tactics:

(with spinnaker)

- in light air (below 10 knots) tack down wind at larger angles to maintain VMG
- in medium wind (10-14 knots) tack down wind at smaller angles
- in heavy air (15+ knots) generally head down wind
- when covering boats chase them to the line and jibe to cover
- if boats are coming up behind you, try and stay away from corners of the course
Tactics: **Polar Diagrams**

Polar Diagram showing calculated performance at different wind speeds and wind angles.

Note the maximum down wind speed vectors for this boat are not directly down wind but at angles of about 160 deg.
Tactics: **Downwind**

Down wind tactics: (with Main & Jib)

- The downwind cone is narrow in main & jib fleet.
- Sail wing on wing by the lee, with windward heel.
- in heavy air (15+ knots) generally head directly down wind
- Because the cone is narrow it is hard to escape from an attack from behind due to the wind shadow. Watch your position to other boats as you round the windward mark to try and stay clear of wind shadows.
- if boats are coming up behind you, try and stay away from corners of the course also.
Tactics: **Downwind**

- **Downwind general rules.**
  - On port tack if wind veers (clockwise) steer lower towards the mark.
  - On port tack if wind Backs (anti-clockwise), gybe onto stbd tack.
  - On Stbd tack, if wind veers gybe onto port tack.
  - On Stbd tack, if the wind backs steer lower towards the mark.
Tactics: Lifts & Knocks at Mark rounding

- **At windward mark:**
  - As you approach the windward mark on Stbd. tack, if you are on a lift then after the rounding you need to be on port tack going downwind.
  - If you are being knocked as you approach the mark on stbd, you need to be on stbd tack after the rounding.

- **At leeward mark:**
  - As you approach leeward mark on stbd tack and the wind is favoured (headed), go onto port tack (lifted) after rounding.
  - As you approach mark on favoured (headed) port tack, then go on stbd tack (lifted) after rounding mark.
Tactics: observing the competition

Sight other boats around you to confirm crossings of Course, to know whether to Tack, duck or continue.
Tactics: Speed/Time/Distance

Have an understanding of distance, speed and time. Keep a table for your length of boat, of boat speed, boat lengths and time to cover the distance.

Example: 1 knot 1.7 ft/sec.
2 knots 3.4 ft/sec.
3 knots 5.1 ft/sec.
4 knots 6.7 ft/sec.
5 knots 8.4 ft/sec.
6 knots 10.1 ft/sec. Etc.

(reminder: the equation time = distance / speed; eg: a 30ft boat takes about 3 sec. to travel one boat length at 6 knots {30/10.1=2.97=3sec.})
### Speed/Time/Distance

**Typical time distance speed table**

<table>
<thead>
<tr>
<th>boat lengths to mark</th>
<th>speed knots (*)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Time in seconds</strong></td>
<td>14.8</td>
<td>7.4</td>
<td>4.9</td>
<td>3.7</td>
<td>3.0</td>
<td>2.5</td>
<td>2.1</td>
<td>1.9</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>29.6</td>
<td>14.8</td>
<td>9.9</td>
<td>7.4</td>
<td>5.9</td>
<td>4.9</td>
<td>4.2</td>
<td>3.7</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>44.4</td>
<td>22.2</td>
<td>14.8</td>
<td>11.1</td>
<td>8.9</td>
<td>7.4</td>
<td>6.3</td>
<td>5.6</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>59.2</td>
<td>29.6</td>
<td>19.7</td>
<td>14.8</td>
<td>11.8</td>
<td>9.9</td>
<td>8.5</td>
<td>7.4</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>74.0</td>
<td>37.0</td>
<td>24.7</td>
<td>18.5</td>
<td>14.8</td>
<td>12.3</td>
<td>10.6</td>
<td>9.3</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>88.8</td>
<td>44.4</td>
<td>29.6</td>
<td>22.2</td>
<td>17.8</td>
<td>14.8</td>
<td>12.7</td>
<td>11.1</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>103.6</td>
<td>51.8</td>
<td>34.5</td>
<td>25.9</td>
<td>20.7</td>
<td>17.3</td>
<td>14.8</td>
<td>13.0</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>118.4</td>
<td>59.2</td>
<td>39.5</td>
<td>29.6</td>
<td>23.7</td>
<td>19.7</td>
<td>16.9</td>
<td>14.8</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>133.2</td>
<td>66.6</td>
<td>44.4</td>
<td>33.3</td>
<td>26.6</td>
<td>22.2</td>
<td>19.0</td>
<td>16.7</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>148.0</td>
<td>74.0</td>
<td>49.3</td>
<td>37.0</td>
<td>29.6</td>
<td>24.7</td>
<td>21.1</td>
<td>18.5</td>
</tr>
</tbody>
</table>

(*)For 25 foot boat
Close

- Racing gets you out sailing, and gets you using your boat.
- Racing teaches you about your boat and boat handling & increases your confidence.
- Improves your people skills in dealing with crew and co-workers.
- Racing is a good social activity also.
- Come racing & Have Fun!