

THE RYA PORTSMOUTH YARDSTICK SCHEME



60 Years of fairer racing

In order to run handicap racing using the Portsmouth Yardstick a club need simply consider the following:

- Which format of racing will we use (Fleet, average lap, pursuit)?
- Which handicap numbers will we use? (RYA list/ Club list from adjusted RYA list)
- How many entries will we have and will we need to have split starts
- How will we handle boats with no established PN?

By considering the above a club can easily formulate a Notice of race and sailing instructions for either club racing or a larger open event. Below is an outline to each format of handicap racing along with guidance notes for club race officers.

For further guidance on writing a notice of race and sailing instructions please see the NOR/SI template document.

Please remember

Mixed Fleet Racing

Mixed fleet racing is similar to a one design/ class race. All boats will start on the same start line, sail the same course and finish on the same finish line. The race officer of the day will need to record the start time and finish time for each boat so that a boats elapsed time can be calculated. By doing this corrected times can subsequently be calculated and the race can be scored.

Average Lap Racing

The objective of average lap race is to allow boats of differing performance to compete together by sailing for similar amounts of time. . By requiring all boats to sail for approximately the same time they should experience generally the same wind and current conditions. Based on the number of laps of the course each boat sails during the period, their elapsed times are factored to represent the times they would have taken to sail the same number of laps as the fastest boat. These factored times are then corrected in the normal way using the appropriate Portsmouth Numbers.

The main advantage of average lap racing is that the range of classes competing can include catamarans, high performance skiffs, and traditional displacement dinghies, which is not always as fair as it could be in mixed fleet racing due the wind increasing/ decreasing towards the end of a race or similar factors. Average lap racing allows more races to be planned for a given period and gives good event time management. If there are a large number of entrants, they can be divided and have separate consecutive starts whilst still competing in the same race. The small courses needed allow clubs with limited water area to put on racing for a wide range of classes.

However with boats spread out and completing more than usual laps, the race officers have to keep constant vigilance to ensure correct lap counting as boats have to cross the same start/ finish line after every lap. It is also difficult to assess relative positions during a race.

Notes to the Race Officer

- Before a race starts the race duration should be decided and made available to competitors I.e. 90 minutes.
- Every lap needs to be the same - starting and finishing on the same line.
- Boats need to cross the start/finish line every lap
- The course size should be so as the slower boats will complete at least 2 laps in the allotted time.
- If the number of entries is such that starting all boats together is impractical they should be started in groups in quick succession. If this is done all start times need to be recorded so that the elapsed time for each individual boat can be calculated.
- Every time each individual boat passes the start/ finish line it must be recorded as such.
- There is no need to record the times of every line crossing, however it may be useful to record the lap time of the slow boats in order to calculate the about to finish signal.
- Before the planned race duration is reached the about to finish signal has to be made, this should be made if possible before the first of the slower boats completes a lap (preferably its third). This about to finish signal should also be made in a gap in the flow of boats so that no one that has just crossed the line can be confused.
- The about to finish signal must have its time recorded.
- After the about to finish signal all boats finish the race the next time they cross the start/ finish line. Subsequently finish times must be recorded so that all elapsed times can be calculated.

Calculations

The following calculations are to be used by clubs running average lap racing to give corrected times amongst other useful calculations to run racing. Note all times are in seconds.

Time Limit = Planned Race Duration x (1 + Factor / Laps))

Where:

Laps = the number of laps completed prior to the about to finish signal

Factor is greater than 1, 1.25 is suggested

NB the time limit is calculated to allow those who had crossed the start/finish line just before the about to finish signal sufficient time to complete the lap they had just started.

Each boats corrected time is calculated as:

Corrected time = (Elapsed time x Most laps x 1000) / (PN x actual laps)

Where:

Actual laps is the actual number of laps sailed, most laps is the number of laps sailed by the boat which sailed furthest.

If a boat ends with a corrected time greater than a boat which completed less laps but has the same PN a modifying calculation should be applied as follows:

Modified time = Corrected time x multiplier

Multiplier = (slowest x (fastest laps – 1)) / (about to finish time x fastest laps)

Where:

Fastest Laps is Actual Laps completed by the fastest boat in the group. Slowest is the Elapsed Time of the slowest boat in the group.

NB this is only applied to a group of boats with the same PN where one or more have been effected by sailing differing number of laps and the corrected times do not reflect a fair outcome.

Pursuit racing

The objective of a pursuit race is that, if boats of different classes are sailed by crews of equal ability, they should all cross the finishing line together, having started at different times related to the Portsmouth Number of their boats.

The advantage of a pursuit race is that as a competitor you know how you are doing on the water without the need to wait for corrected times to be calculated. The start line is also normally less congested as each class/ group will start separately. The disadvantage is that the race management can be more demanding due to the larger number of starts needing to be run.

Notes to Race officers

- The race duration has to be fixed and needs to be decided early enough to establish starting times for each class/ group of boats with the same PN
- The race duration should be based on the slowest boat (boat with highest PN) bearing in mind that if you choose 2 hours for an optimist this may only be 20 minutes for a foiling moth so make sure you know your entry list before deciding race duration.
- If using a course that involves laps, it is preferable to have each lap long enough so as to avoid the earlier starters on their second lap "getting in the way" of the later starters.
- With multiple starts occurring potentially within seconds of each other it is sometimes impossible to give each class a standard start sequence of 5,4,1 Go. It may be advisable to have sound signals overriding visual signals or give each start a number and have cards displaying which start is next etc.
- Large fleets may benefit from a restricted starting area in which no boat can enter until a certain time before her scheduled start.
- As it would be detrimental to the start sequence to give a general recall to any but the first start it is really important to ensure you have enough spotters to cope with the number of entries you have.
- The Finish:
- Since starting times are calculated with certain race duration in mind the race must be finished as close to the race duration end as possible.
- Where boats finish on the water is their finish position
- Some methods of finishing are as follows
 - Dropping a buoy a short distance in front of the leading boat seconds before the race duration ends and thus creating a finish line.
 - To ensure boats finish on the club's usual finish line a patrol boat shadows the leader and as the race duration is near ending a buoy is dropped which all boats have to round/ pass and go directly to the club line to finish. This will take a skilled race officer to guess how long before the race duration to drop said buoy and have all boats sail to the finish line at the end of the race duration.
 - Have competitors self-declare who is in front and behind them at a given time.
 - Have a patrol boat drive past the fleet and note the positions at the end of the race duration

Starting times

Starting times are calculated for a particular race duration. If 1.5 hours (90 minutes) is chosen as the race duration related to boat X with a PN of 1200 then the expected race duration for boat Y with a PN of 1000 would be 75 minutes and for boat Z with a PN of 1400, 105 minutes. These times are simple ratios i.e. $1200/90 = 1000/75 = 1400/105$. Boat Y's start time would be $75-90 = -15$ minutes i.e. 15 minutes after boat X. Boat Zs start time would be $105-90 = +15$ minutes i.e. 15 minutes before boat X.

Please see the Pursuit race spread sheet for help in designating start times using the above ratios.