



# 2018 Handicapping Synopsis Monday-Night Racing at SPSC

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## Time-on-Time Handicapping

We will carry on with the time-on-time handicapping and performance data that we have used at SPSC since 2012 (skipping 2010 and 2011 where we did things a little differently). Your rating will be a rolling average of the performance of your individual boat in seconds per nautical mile — in the next race this handicap will divide your elapsed time to determine your corrected time.

## Computing the Rolling Handicap

For each race we will compute a time-on-time handicap (and call it the imputed handicap) that would give every boat the same corrected time (with a per race normalization factor to minimize drift from initial ECPHRF derived numbers). Each boat will have its final rating determined by collecting the previous seven imputed handicaps (but see next) discarding the extreme values and averaging the middle five by geometric mean. Older imputed ratings are discarded. All this is shown on the Monday-night scratch sheet available from the main results page of the web site [www.southportsailingclub.com/results.html](http://www.southportsailingclub.com/results.html).

## Accelerating the Convergence to a Rolling Performance Handicap

For 2018 we are trying a new method to assign rolling ratings for boats that have not yet finished seven races. This will not affect boats that already have an established rolling handicap; rather, it is a way to rapidly phase out the initially assigned handicap with a genuine (if volatile) performance handicap.

After Joining Fleet	How the Rolling Handicap is Determined
initially	assigned initial handicap based on ECPHRF JOG rating
after first finish	assigned initial handicap again
after second finish	median of previous two imputed handicaps together with assigned handicap
after third finish	median of previous three imputed handicaps
after fourth finish	geometric mean of middle two of previous imputed handicaps
after fifth finish	geometric mean of middle three of previous imputed handicaps
after sixth finish	geometric mean of middle four of previous imputed handicaps
after seventh finish	standard rolling handicap
after eighth finish	standard rolling handicap discarding the oldest imputed handicap

After three races your rolling handicap is no longer dependent on your assigned handicap.

## Reported Corrected Times

Corrected times will be calculated from elapsed time  $t$  by the formula  $t \times \frac{\star k}{k}$  and reported rounded to the closest second. Here  $\star k$  is the handicap of a scratch boat used as a common reference for all boats. Note that the elapsed and corrected time are the same for the scratch boat. The choice of  $\star k$  is arbitrary as it has no effect on how a boat will place — using the fastest boat is traditional — the SPSC racing page first loads with the winning boat as scratch but any competitor can be designated the scratch boat by clicking on the table row. The results page will report differences in corrected time for each boat from the scratch boat.

Boats are actually placed by ordering the  $\frac{t}{k}$  fractions so actual ties on corrected time are far rarer than the (still rare but occasional) apparent ties in the reported but rounded corrected time.

## The Failures of PHRF Numbers and Initial Handicaps

Using results data from Monday-night racing we have determined two alternative conversion formulas from ECPHRF handicaps to estimated average performance of ECPHRF Rating + 800 s/mi. on one hand or  $2 \times (\text{ECPHRF Rating} + 300 \text{ s/mi.})$  on the other. They agree on mapping an ECPHRF rating of 200 s/mi. to an average pace of 1000 s/mi. (a measly 3.6 knots). These can be used for either time-on-distance or time-on-time handicapping for round-the-buoys racing on Lake St. Clair. They differ from the ECPHRF Rating+500 s/mi. formula that we first used in 2012 that turned out to be not only absurdly optimistic as to average speeds but also woefully inadequate to account for the performance difference between boats. Most of this shortfall was undoubtedly owing to the difference in race readiness between the lower rated boats favoured by racers and the higher rated boats favoured by cruisers — but it wasn't possible to isolate the underlying performance potential of a boat using the available data and it is against the spirit of Monday nights to do so — we want members to be able to race their boats as is. It was hoped that over time a reasonable initial handicapping formula would become apparent. This hasn't been very successful but aggregate performance has become pretty clear.

## Changing the Gauge for 2018

We are using a  $\times^{10/7}$  gauge transformation of the initial and imputed handicaps carried over from previous years (up to seven such imputed handicaps for each boat — see the scratch sheet). Maintaining the formula we have used since 2014 to introduce new boats together with the  $\times^{10/7}$  transformation gives us

$$\text{Initial rolling rating} = \begin{cases} 900 \text{ s/mi.} + {}^{10/6} \times (\text{ECPHRF} - 150 \text{ s/mi.}) & \text{when } \text{ECPHRF} \leq 150 \text{ s/mi.} \\ 1000 \text{ s/mi.} + {}^{10/5} \times (\text{ECPHRF} - 200 \text{ s/mi.}) & \text{when } 150 \text{ s/mi.} \leq \text{ECPHRF} \leq 250 \text{ s/mi.} \\ 1100 \text{ s/mi.} + {}^{10/6} \times (\text{ECPHRF} - 250 \text{ s/mi.}) & \text{when } 250 \text{ s/mi.} \leq \text{ECPHRF} \end{cases}$$

The change in gauge is for the convenience of competitors so that they might estimate the time to complete a course in average conditions. The effective handicapping is exactly the same as in previous years.