

# PEYC Rolling Handicap System

## Introduction:

Port Edgar YC has used a Rolling Handicap (RH) system since 1995, applying it to the majority of club races to encourage competitors to try harder by reducing the performance differentials across any fleet. It tracks the achieved performances of boats and adjusts handicaps after each race to encourage the 'mid-fleet' racers, challenge skilled crews and keep series results closer together. The RH rules are defined in the Sailing Instructions.

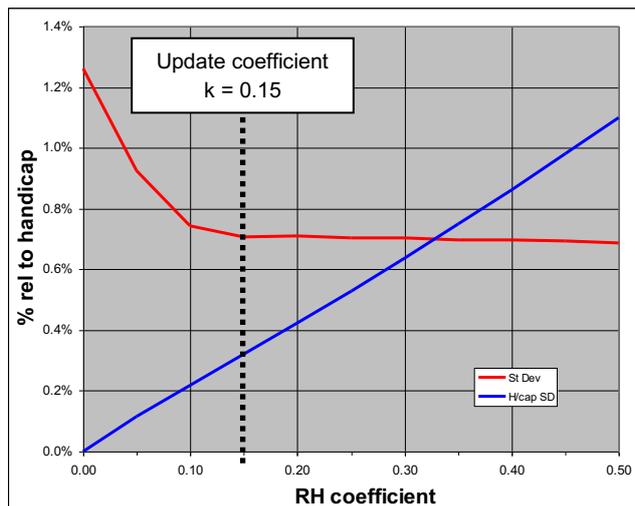
## PEYC 2021 Sailing Instructions 1.17(b):

*The achieved performance of each boat shall be calculated using the RYA YR2 Standard Corrected Time (SCT) for the race, provided that at least two boats contributed to the SCT. The boat's new RH value shall be shifted 15% from its current RH towards its achieved performance. 'Slow' performances shall be capped at +5% relative to a boat's nominal handicap for update purposes but no RH change shall be applied until two or more consecutive slow performances occur. 'Fast' performances shall be capped at -5% relative to a boat's nominal handicap for update purposes.*

Hence:  $H' = H + k(P-H)$  where  $H'$  &  $H$  are the updated & previous rolling handicaps  
 $P$  is the achieved performance in the race  
 $k$  is the update coefficient (currently 0.15)

The +5% and -5% capping boundaries prevent RH values diverging more than 5% from a dinghy's RYA Portsmouth Yardstick handicap or a yacht's FYCA Baseline Handicap. The requirement for a boat to have two or more consecutive slow results (i.e. >+5%) before applying an RH change, filters out sporadic atypical performances due to crew mistakes, 'wind-tide gate' situations or significant wind strength changes after the leading boats have finished. In control engineering terms, the RH algorithm is a bounded Butterworth filter with rejection of intermittent positive spikes.

The RH update coefficient is selected to reduce the spread of average performances relative to rolling handicap, of boats within a fleet, for the least amount of handicap variation for individual boats. The graph shows the reduction in standard deviation (SD) of the average assessable (i.e. in range -7.5% to +5%) performances of boats in a fleet as the update coefficient  $k$  is increased. From 1.3% SD at  $k = 0$ , it reduces to 0.7% SD at  $k = 0.15$  but shows no further improvement as  $k$  increases. Meanwhile the standard deviation of RH variability (i.e. handicap 'noise') increases linearly from 0% at  $k = 0$ . The RH coefficient  $k$  was initially set at 0.25 in 1995, reduced to 0.20 in 1996 and to an optimal 0.15 in 2001.



Overall, the PEYC RH system is simple enough to understand, subtle enough to generate closer club racing and is well supported by the membership.

In general, skilled crews still tend to win race series on RH, but they have to 'up their game' and be more consistent, good training for big events. RH encourages average crews to try harder because the performance gap they face is reduced.

*Jim Scott - PEYC Sailing Secretary*