

**<u>RACEHORSE PERFORMANCE</u>** <u>AS AN EPIDEMIOLOGICAL</u>



Animal *Health* Trust

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**OUTCOME MEASURE** 

# SUMMARY

- Racing performance in thoroughbreds represents an important epidemiological outcome measure used to assess the effects of different husbandry and veterinary exposures.
- Official Ratings are used as a performance measure in the British racing industry; however their production is not transparent. There is no universally-accepted measure consistently referenced throughout the veterinary literature.

 $\sim$  We developed an easily calculable and transparent index that correlates over time with Official Ratings.

### INTRODUCTION

Box 1: Measures of performance used previously and their disadvantages

- Thoroughbred racehorses are a uniform cohort of animals that are often investigated
- Current measures of performance have several disadvantages (Box 1) A simple performance index that could be applied across time and different racing industries would be a valuable contribution to veterinary research

### METHOD

Race-start data for 2000, 2005 and 2010 were purchased from the BHA
Correlation coefficients for each year were calculated between ORs and
(i) the new performance index (Box 2)
(ii) log10 (race winnings + 1)
(iii) the point system index (Box 1)
Data were analysed both at race start level and using mean values per horse

Performance measure	Disadvantage			
Official Ratings (ORs) and Racing Post Ratings (RPRs)	<ul> <li>Derivation not transparent</li> <li>Not issued for up to 35% of race starts</li> <li>Normal distribution not reflective of real life where most horses perform in the lowest quartile</li> </ul>			
Race winnings and point system index (1 <sup>st</sup> = 3 points, 2 <sup>nd</sup> = 2 points, 3 <sup>rd</sup> = 1 point)	<ul> <li>Most horses starting a race receive zero (up to 66% for race winnings and 73% for point system index)</li> <li>Do not correlate well with industry standards</li> </ul>			
Box 2: The new performance index				
<ol> <li>Calculate percentage of field beaten by horse <sup>[1]</sup></li> <li>= (<u>number of runners – finishing position)</u> x 100% (number of runners – 1)</li> <li>These are divided into deciles and ranked 1 to 10</li> </ol>		ran % field beaten	k for: 2005 purse (£)	Rank given
		10	3,634	1
		20	4,210	2
<ol> <li>Deciles for race purses (total prize fund available for each race) that year are calculated for the cohort and ranked 1 to 10</li> </ol>		30 40	5,180	<u> </u>
		50	5,890	5
		60	6,660	6
		70	8,700	7
		80	10,816	8

**Figure 1:** Correlation with OR over time based on data from each start



The new performance index is the product of these two rankings

9020,44891001,250,00010

 $\rightarrow$  using the table above:

Rank = 7

Rank = 7

*Example:* A horse comes 5<sup>th</sup> out of 13 horses in a race with purse £7500 in 2005

- 1. Percentage of field beaten = (13-5)/(13-1) = 67%  $\rightarrow$  using the table above:
- 2. Deciles for purse are calculated for the 2005 cohort

New performance index =  $(7 \times 7) = 49$ 

#### RESULTS

- 134,781 race-starts in 14,610 races were analysed
- The new performance index correlated much better with ORs in all years than race winnings or the point system index, both on per start (Fig. 1) and horse levels (Fig. 2)



# DISCUSSION

- Using purse and percentage of field beaten allows easy calculation of performance for every horse in every race
  - This new performance index correlates better with Official Ratings than other performance measures used previously in the veterinary literature
- Our validation shows that it can be applied as a performance measure across time periods
- It is a quantitative and transparent value that can be used across racing jurisdictions

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REFERENCEPRINTED BY:1.Newton et al. (2005) EVJ 37 402www.SCIENCEPOSTERS.co.uk

