

## PRE-RACE BEHAVIOUR OF HORSES AS A PREDICTOR OF WINNING SUCCESS

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Horse racing is 1 of the few gambling opportunities where gamblers can use objective information to increase their chances of success. Bettors can gain an edge by observing the behaviour and condition of horses as they parade in the mounting yard before a race. However, even professional handicappers, who make a living by calculating a horse's weight or speed advantage in a race, admit that they cannot assess pre-race condition or behaviour (Scott 1978).

We attended 10 race meetings at 2 Melbourne racecourses, Flemington and Moonee Valley, over a 20-month period. We scored the appearance and behaviour of 867 horses entered in 67 races. For each horse we recorded 29 variables, 19 of which were behaviour/appearance variables. Seven variables were race-book information, 14 were parade ring/mounting yard variables, scored while the horse was being led by the strapper, and included the position of the HEAD, EARS, and TAIL, FITNESS, condition of the COAT, presence or absence of sweating and bandages (SWEAT, BAND), the HOLD of the strapper, length of the leading STRAP, and arousal (AROUSE). Five variables were scored while the horse was on the way to the barrier with the jockey up, including head and neck angle (THEAD, TNECK), resistance to the bit (TMOUTH), and whether led by the clerk of the course (TLED). Three variables were recorded from the published race results - actual weight carried (AWT), starting price (TOTE), and finishing order (FINISH). The data were analysed using the techniques of univariate and bivariate analysis, and multivariate discriminant analysis.

Univariate analysis showed that only TAIL, THEAD and TMOUTH had a significant ( $P < 0.05$ ) relationship with FINISH. The power of these variables to discriminate finishing order was poor when compared with the traditional variables TOTE and AWT. Classification of horses into winners (finishing in the first 20-percentile) and losers (finishing in the last 20-percentile) showed that winners tended to be fitter and more relaxed and losers tended to be more aroused and required greater control.

Bivariate analysis revealed significant ( $P < 0.05$ ) positive correlations for both winners and losers between HEAD and TAIL, AROUSE and TAIL, and THEAD and TNECK. In addition, winners showed significant positive correlations between AROUSE and THEAD, and HEAD and THEAD. These correlations confirmed our assumption that increased elevation of the head, neck and tail are associated with increased arousal. Losers showed significant positive correlations between COAT and SWEAT, SWEAT and STRAP, SWEAT and AROUSE, and EARS and AROUSE. These correlations are interesting as winners showed no positive associations between sweating, coat condition and arousal. They suggest that sweating on its own is not a reliable performance indicator, but in conjunction with other variables may indicate losers.

Multivariate discriminant analysis was used to discriminate winners (first 20-percentile) from other horses, and losers (last 20-percentile) from other horses. Discriminant functions based on horse performance at Moonee Valley were computed and then used to predict group membership (ie winners or losers) at Flemington. Six variables (TOTE, TNECK, HOLD, AWT, TLED, BAND) were required for maximum discrimination of losers, in contrast with eleven variables required for discrimination of winners. Classification of results using the discriminant functions to predict winners and losers showed that 3 1/104 (29.8%) actual Flemington losers were predicted by the losers' discriminant function. More importantly, 31/46 (67.4%) losing predictions were correct. In contrast, 9/84 (10.7%) actual Flemington winners were predicted by the winners' discriminant function. The accuracy of winning predictions was also poor, with only 9/32 (28.1%) predictions being correct.

We conclude that pre-race behaviour and appearance of horses is a valuable aid in predicting losing horses and that this information has potentially high economic worth.

SCOTT, D. (1978). "Winning - An Objective Guide to Successful Punting". (Wentworth Press: Sydney).