SIGNIFICANCE OF THE STRIDE DATA

Introducing SIMON ROWLANDS, our new columnist analysing racing data and statistics, who this month presents an intriguing look at stride length and frequency in racehorses

SLOWLY, but surely, the sport of horseracing in Britain is dragging itself into the 21st century in terms of its relationship with data.

Sectional timing has existed on a small scale on and off for many years now, with private enterprises, such as Timeform, additionally sourcing their own. In recent years, the data and technology company Total Performance Data has made detailed timings available from a handful of courses both live/on-screen and after the event through the At The Races website.

TPD also started publishing figures fairly recently covering stride length and stride frequency in what was a first in British racing. Even measures as basic as these promise to revolutionise the understanding of equine performance.

The first meeting to be covered in this manner by TPD was at Southwell on January 24, 2017, and the first winner to have its striding measured electronically was a horse called Daily Trader in a modest mile maiden handicap. It might have been one small stride for a horse, but it was a giant leap for horseracing analysis.

Striding analytics have existed away from the racecourse environment for rather longer, for it is also possible to derive these measures from sophisticated video analysis. The modern Breeze-Up Sale is likely to see individuals poring over not just pedigrees and conformation, but also timings and striding patterns.

A horse's speed in getting from A to B is a product of its stride length and its stride frequency. It is really that simple in many respects, but the opportunities presented by striding analysis are almost boundless.

Good horses tend to have long strides – I measured Frankel at a peak 27.3 feet in the Sussex Stakes at Goodwood in 2011, against a TPD population average of 24.4 feet – and in a controlled and consistent environment such as the Breeze-Ups stride length is understandably where much of the focus is to be found.

But stride length is heavily affected by both surface speed and course topography – slower going and uphill sections will shorten a horse's stride, faster ground and downhill sections will do the opposite – which may vary greatly between one race and another, whereas stride length's close relation, stride frequency, is not. That makes the latter a more immediately appealing area for exploration in races themselves.

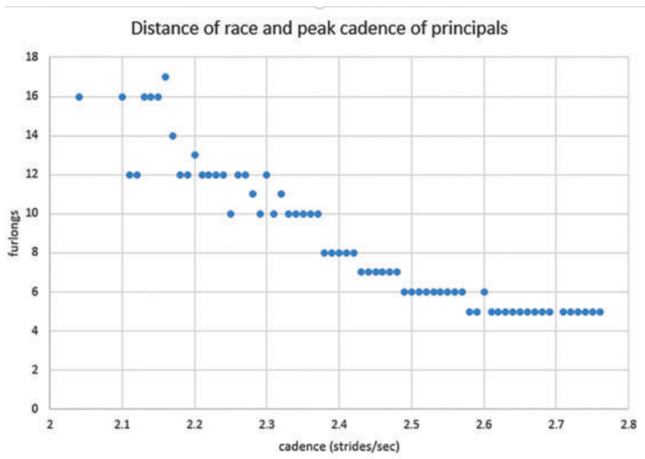

Figure 1

While stride length is associated with ability, stride frequency – or "cadence" as it is often termed – is linked with stamina, and possibly with the ability to adapt to different course types. A horse that "revs" quickly will do so at a cost to its own energy and will ultimately pay the price; a horse that can "switch off" has the potential to carry its innate ability over further.

This general correlation can be demonstrated by comparing the TPD figures for peak cadence for all horses to have finished in the first three in older-horse handicaps in the last two years with the distances at which they were racing. (See Figure 1, left)

Those data points represent the median distance at which mature and in-form horses with those peak stride frequencies raced. It is very apparent that faster striding is associated with shorter distances and slower striding with longer.

If a horse is to excel at sprints, it ideally needs to be able to turn over its stride at 2.5 per second or more. Every bit as interestingly, the ability to do that is most likely to compromise a horse's ability to stay further, with only a few exceptions.

Horses which peak at 2.2 strides/second or less are likely to be best at 12 furlongs or more. My own research shows that Cheltenham Gold Cup contenders tend not to get much above 2.0 strides/second; they would become fatigued long before the finish of the extended three-mile race if it were otherwise.

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This is all well and good in describing the kind of horse you have on your hands already, but the real payoff is if it has predictive value, and it seems to.

Digging deeper reveals that cadence is unaffected by class and scarcely affected by age, for two-year-olds have almost identical cadences to older horses, at least once their debuts are out of the way.

An interesting finding is that cadence is slightly higher at Southwell – where the Fibresand surface possibly requires greater traction – than on other all-weather tracks, while it is fractionally lower on Tapeta at Newcastle and Wolverhampton.

Cadence may well be "hard-wired" to a large degree, though clearly some aspects of a training regime are likely to involve trying to teach a horse how to relax, in its general demeanour if not necessarily specifically in terms of how frequently it strides.

The predictive element of striding has already reaped dividends, with Saxon Warrior and Roaring Lion identified as 8f/10f performers and Masar (who peaked at no higher than 2.30 strides/second in his previous races) as a horse still with potential at further prior to the Derby at Epsom.

Admittedly, Roaring Lion nearly proved an exception to the rule – it was only in the final furlong of the Derby that he ran out of puff – and there are others out there, too. For instance, the Australian star Winx regularly exceeds 2.5 strides/second but can switch off in the rest of the race. There are also some other interesting nuances not yet mentioned.

Before returning to those in next month's column, I thought it would be worth looking at a few of Mark Johnston's champions from yesteryear, as well as a couple from not so long ago, with regards to stride length and stride speed as an illustration of some of the wider issues. (See Figure 2, above)

Date	Race	Course	Horse	Dist	Going	Peak Length	Peak Cadence
30-Apr-94	2000 Guineas	Newmarket	MISTER BAILEYS	8f	Firm	25.7 feet	2.37 strides/sec
22-Jun-95	Gold Cup	Ascot	DOUBLE TRIGGER	20f	G/F	23.3 feet	2.26 strides/sec
18-Jun-99	Hardwicke Stakes	Ascot	FRUITS OF LOVE	12f	Firm	25.8 feet	2.23 strides/sec
02-May-04	1000 Guineas	Newmarket	ATTRACTION	8f	G/F	24.7 feet	2.37 strides/sec
26-Sep-15	Cheveley Park Stakes	Newmarket	LUMIERE	6f	G/F	23.7 feet	2.46 strides/sec
24-Sep-16	Middle Park Stakes	Newmarket	THE LAST LION	6f	G/F	24.0 feet	2.55 strides/sec

Figure 2, stride data of some of Mark's top horses

There are some evocative names in there!

At one extreme, there is The Last Lion, a colt who raced exclusively at 5f/6f and gained his most notable victory in a speed-favouring Middle Park Stakes at the longer trip, turning over his stride at more than 2.5 per second.

At the other, we have the outstanding stayer Double Trigger and the high-class, mile-and-a-half horse Fruits of Love striding more slowly and sustaining it for much further as a result.

IN between, there is Mister Baileys – third in the Dante Stakes as well as the winner of the 2,000 Guineas at Newmarket, of course – who seemed to remember that he strode like an 8f/10f performer halfway up the straight in the 1994 Derby at Epsom, when finishing fourth over the 12 furlongs.

Mister Baileys had a pretty long stride, as did to a lesser degree Mark's 1,000 Guineas winner, Attraction. The latter was described, not unfairly, as an "unimpressive mover" by Timeform, but her outstanding record at the top level underlines that striding does not have to look pretty, just as long as it is effective. And hers was! ■